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1.0 Introduction

Welcome and congratulations on buying your new A2B Obree, the electric bike that's taking transport in a whole new direction. It's the revolutionary way to get to work, visit the shops or just get some fresh air. Compared to jumping in the car, an ebike is a lot more fun, easier to park and will reduce your fuel costs as well as your impact on the environment... as you'll soon find out! Feeling energetic? You can ride your new A2B Obree powered off and then switch the assistance on for hills and headwinds. We dedicated our new bikes to pioneers that redefined the way we do things in the modern World. As a tribute, the A2B Obree bike was named after Graeme Obree who took the limits of the hour record in track cycling to an unprecedented level through his radical bicycle construction designs.

WARNING

- Wear light fluorescent clothing at night.
- Your existing insurance policies may not provide accident cover for your A2B Obree. Contact your insurance company or agent for information.
- This owner's manual makes no representation about the safe use of the A2B Obree under all conditions. See your A2B dealer for all service, repairs or maintenance and for referral to suitable classes, clinics and books on cycling.

1.1. Intended use of your A2B

Your A2B equipped with the neodrives drive system is a Pedelec (Pedal Electric Cycle) for usual transport of one person in public road

traffic. Any adjustments and repairs of the A2B and its components will only be regarded as intended use as far as they are described and permitted in these operating instructions, the instructions from the component manufacturers or any further documents provided upon purchase of the Pedelec. The manufacturer does not assume any liability for damage caused negligently due to misuse, improper use, improper or omitted maintenance or repairs. The driver is responsible for checking the Pedelec as prescribed, having any necessary works carried out and using it appropriately. These operating instructions describe the use of your A2B and its components and correspond to the state of the art at the time of printing. The manufacturer reserves the right to make changes resulting from the further development of mechanics, the software or from any statutory requirements.

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** The A2B Obree electric bicycle is here in after in short referred to as "A2B".

2.0 Important information

This owner's manual contains important safety, performance and service information. Please ensure that users of your A2B Obree read and understand the following important warnings and cautions before their first trip. If you have any questions or are not sure about any instructions in this owner's manual ask your A2B dealer. Read and understand the following warnings and cautions. If your A2B Obree is used by others, please show this section to them so that they are aware of these important warnings to reduce the risk of an accident. Important terms. Throughout the manual, the following symbols and terms call your attention to important warnings, cautions and notes. Read, understand and follow them whilst using your A2B Obree.

Please ensure that all users of your A2B read and understand the following important information.

- According to the Straßenverkehrszulassungsordnung (StVZO) [Road traffic approval regulations], a bicycle must be equipped with two operative brakes which are independent of each other, a clearly audible bell, headlamp, rear lamp, pedal reflectors, side reflectors for wheels or integrated reflective strips on the tyre and front and rear reflectors.
- Your A2B is suitable for riding on pavements and cycle highways and paths. Therefore, do not ride beyond paved ways or off-road. Do not use the A2B across water, for off-road jumps and sports events.
- We recommend to always wear an approved bicycle helmet when using the A2B and to additionally wear light or reflective clothes at night.
- Make sure that you know and observe the rules of behaviour for safe and responsible cycling. When riding the A2B, there is always a risk of severe / fatal injuries or material damage resulting from an accident. By deciding to ride the A2B you assume the full responsibility for this risk.
- Your current insurance policies might not include accident insurance coverage for using the A2B. Please ask your insurance or insurance agent concerning this matter.
- This user manual does not express any guarantee as to the safe use of the A2B under all conditions.

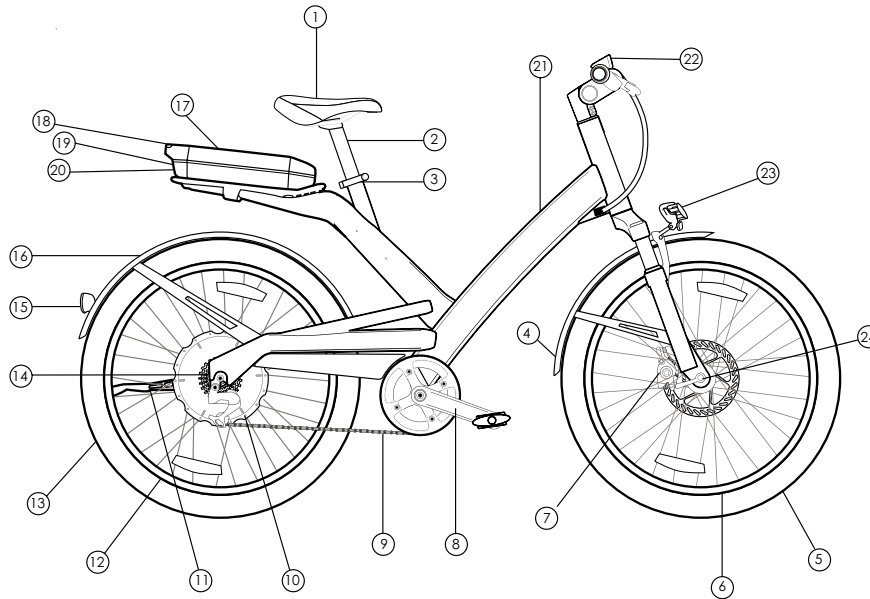
Important symbols

	Indicates a potentially dangerous situation which may lead to a severe injury, material or equipment damage or unwanted system failure if this situation is not prevented.
	Indicates useful or other important, relevant information.

If you have any questions or do not understand particular instructions of this user manual, please ask your A2B specialist dealer or contact our customer service using A2B.UK@heroeco.com.

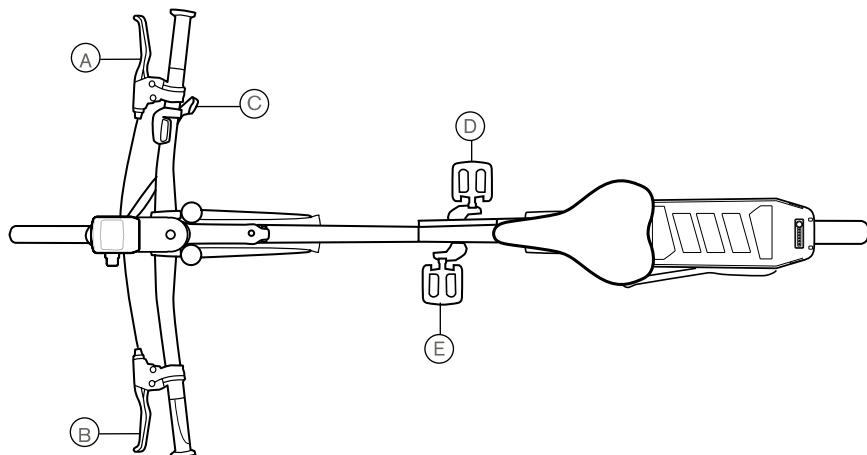
3.0 Your A2B

3.1 Components



1. Saddle (seat)
2. Saddle post
3. Quick release
4. Front splash guard
5. Front tyre
6. Front wheel rim
7. Front disk brake and rotor
8. Pedals, pedal crank and chainring
9. Chain
10. Motor
11. Stand
12. Rear wheel rim
13. Rear tyre
14. Derailleur and freewheel
15. Reflector
16. Rear splash guard
17. Battery
18. LED rear light
19. Z reflector on battery
20. Battery plug
21. Frame
22. sMMI
23. Headlamp
24. Quick release front wheel

3.1 Components



- A.** Right-hand brake lever
(for rear wheel brake)
- B.** Left-hand brake lever
(for front wheel brake)
- C.** Shift lever
- D.** Right pedal
- E.** Left pedal

3.2 Replacement of components, fitting of accessories

Before mounting any components or accessories (including different tyres), you should ask your certified A2B specialist dealer if they are appropriate for your A2B.

Please read and observe the instructions for the respective components or accessories you have bought for your A2B. Please observe the manufacturer's instructions for the components or accessories if they are different from these instructions.

 As all mechanical components your A2B is subject to wear and tear as well. Especially in case of high strain, the user must watch out for wear and tear. If a component's life cycle is exceeded, this component may suddenly become inoperative leading to severe or even fatal injuries. Therefore, please watch out for signs of wear and tear, such as cracks, scratches and changes of colour in spots which are subject to high strain, e.g. on the frame, fork, wheels and handlebars, indicating that the life cycle has been completed or even exceeded. Have worn components replaced immediately by your specialist dealer.

 If you do not check components or accessories for fitness and mount, use and maintain them properly, this may lead to severe or even fatal injuries.

 The use of non-original components or spare parts may endanger your A2B's safety and void the warranty.

 The replacement of components or fitting of accessories will be made at your own risk, since the fitness, reliability or safety of these parts for use with your A2B may not have been checked by Hero Eco.

3.3 Adjustment of brake levers

Are you able to easily operate the brake levers? If not, take your A2B to an A2B specialist dealer to have the brake levers' angle adjusted.

Alternatively, you may adjust the brake levers' angle on your own as indicated below:

1. Loosen the screw below the brake lever using an appropriate Allen key.
2. Adjust the angle as required.
3. Tighten the screw and make sure the brake lever is retained securely in place.

 For adjustment of the brakes, you should take your A2B to an A2B specialist dealer.

3.4 Adjustment of the seat height

The seat height may have to be adjusted. Please ask your A2B specialist dealer to adjust the seat height before your first tour. You may also adjust the seat height on your own as indicated below:

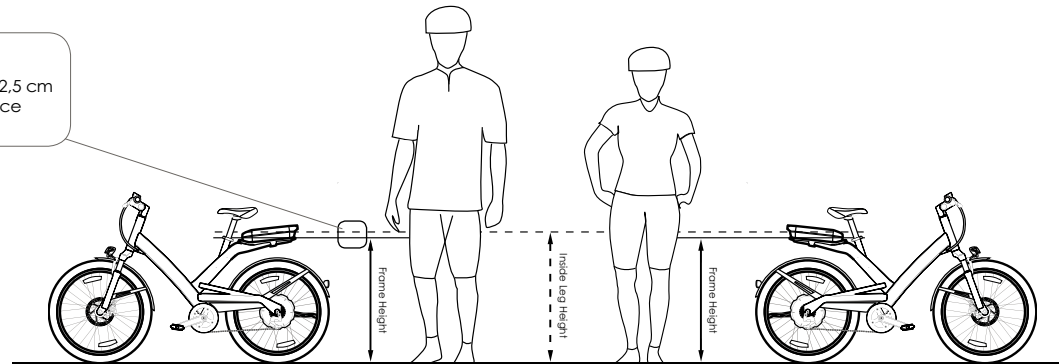
Determination of the correct driver's seat height

There are several ways of determining the correct seat height; the method which can be carried out without any further auxiliary means is described in the following: Sit on the saddle and stretch one leg. Put your foot's heel on the pedal which is on the lowest point of the crank turn. Your knee should now be almost straightened.

If you are sitting straight on the saddle while having this position, the saddle's height is correct.

Of course, you then do not drive with legs stretched. If you put your foot on the pedal while having the correct driving position (ball of foot and metatarsophalangeal joint above the pedal axle), the knee will remain slightly angled also on the lowest point of crank turn if the saddle height has been adjusted correctly.

A short test ride is recommended to find out if the saddle is too high. If the pelvis tilts to the right and the left in the rhythm of pedalling, the saddle is too high. If the saddle is too low, you will usually find it out only after many kilometres through pain in the knees.



Height adjustment

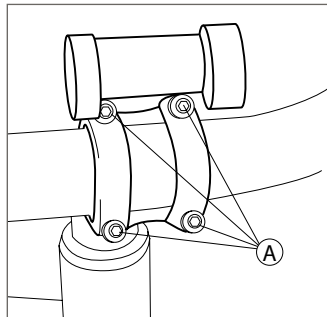
1. The seat height can be adjusted by loosening the quick release for the saddle post.
2. Position the saddle at the desired height. Do NOT position the saddle higher than the minimum insertion mark located on the saddle post BY NO MEANS.
3. Push the lever of the quick release towards the frame, until it will be closed again. The lever must not stick out to avoid danger of injuries. The lever is safely attached if you must use efforts to push it into the closed position. The efforts are appropriate if the lever leaves a mark on the palm of your hand when pressing. A properly closed quick-release cannot be moved anymore unless it is reopened as specified above. If you can move the mechanism slightly, open the lever of the quick release, turn the adjusting nut by another 180° and try again.
4. After height adjustment, check if the saddle cannot be moved in any direction.

⚠ An improperly attached saddle may lead to severe or even fatal injuries. Ensure that the saddle clamp screw (saddle post - saddle) has been tightened using 27 Nm.

- This user manual does not express any guarantee as to the safe use of the A2B under all conditions.

3.5 Adjustment of the handlebars

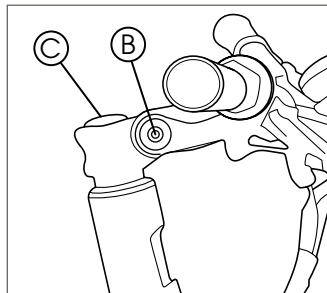
1. Loosen the screws A using an appropriate Allen key.
2. Align the handlebars centrally with respect to the stem.
3. Turn the handlebars to achieve the desired angular position.
4. Tighten the screws A evenly using 5 Nm.



3.6 Adjustment of the variable stem

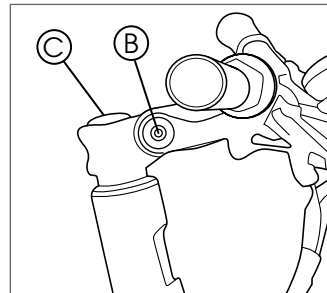
Alignment of the handlebars stem

1. Loosen the screws B using an appropriate Allen key.
2. Align the stem with respect to the front wheel.
3. Tighten the screws evenly using 15 Nm.



Angle adjustment of the stem

1. Loosen the screw C using an appropriate Allen key.
2. Position the stem in the desired angle.
3. Tighten the screw C to 17-18.5 Nm und ensure the stem is aligned with respect to the front wheel.



⚠ Caution: This is an A-headset stem, the upper screw D is a pretensioning screw and not intended for adjusting the stem! Trying to tighten screw D may result in damage of the headset.

⚠ An improperly attached handlebar and stem may lead to severe or even fatal injuries.

Make sure the steering is free of play and can be operated easily. Please contact your A2B specialist dealer if you need more help in adjusting the handlebars, headset and stem.

4.0 Please familiarise with the functions of your A2B before your first ride

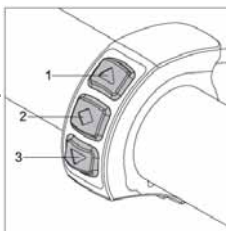
If you still have any questions after having read this section, please ask your A2B specialist dealer before your first ride to explain any unclear functions or features to you.

4.1 A2B at a glance

As soon as you start to pedal when the drive system is enabled, you will realise that the motor will start and assist you based on the adjusted level of assistance - making riding a bike an effortless pleasure.

4.2 Starting and stopping

1. Put your helmet on and look for a calm place without any obstacles, cars or other hazards, if possible.
2. Ensure that the battery has been charged and connected correctly
3. Activate the drive system by pressing the controller's middle button next to the left handlebar grip.
4. Fold up the stand into the driving position. Do NOT sit on the A2B if it is still supported by the stand. By doing so, you damage the stand and possibly the frame.
5. Sit on the A2B and find a pleasant sitting position.



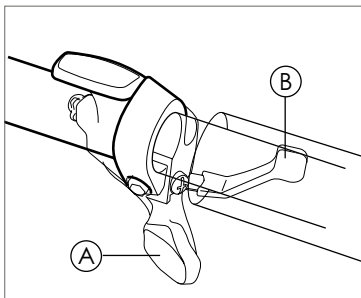
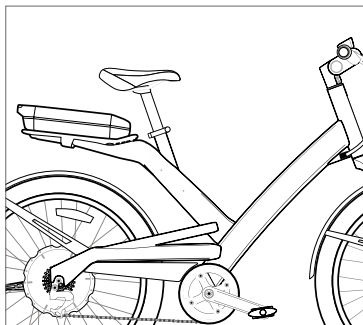
6. Start to pedal and start the motor assistance in this way.
7. Test the brakes at low speed. The left brake lever actuates the front wheel brake, the right brake lever actuates the rear wheel brake in most EU countries (break activation is the opposite of stated). When pulling the brake levers too much, a wheel may be locked which could make you lose the control over the bicycle and fall. Remember that both brake levers include a motor switch-off device; as soon as you operate one of the two brake levers, the motor's power supply will be switched off. So do not brake if the engine is to run.

i Remember that both brake levers include a motor switch-off device. As soon as you operate one of the two brake levers, the motor's power supply will be switched off. So do not keep a brake lever pulled if the motor is to run.

8. Try to handle your A2B and test its reactions. Become familiar with how the suspension responds to the brakes being operated by the driver and shifting of weight by the driver.

4.3 Gear box

Your A2B is equipped with a derailleur actuated by the two pressure levers at the right-hand side of the handlebar. To facilitate pedalling (e.g. at gradients), you operate the large lever located in front of the handlebar and marked with A in the drawing. In this way, you shift down and have to pedal faster to maintain your speed. If you want to go faster (in plain or downhill), you shift up one gear using the smaller lever which is marked as B in the opposite figure and located behind the handlebar from the driver's point of view and may pedal slower, but you have to use more efforts.



The derailleur operates independently from the motor. Using the derailleur, adjust a gear which enables pleasant pedalling and helps the motor at the same time.

4.4 Lighting

Turn the on/off switch located on the headlamp into the respective direction to switch on or off the lighting.

⚠ Do not ever move the pedals backwards when shifting into another gear. The chain might jump off and you might lose the control over the bicycle which could lead to accidents with severe or even fatal injuries and/or material damage. Always pedal evenly and in forward direction when shifting into another gear.

4.5 Luggage rack

The standard series of your bicycle model is not equipped with a luggage rack, the CHARGER of your A2B, however, has a slot for a luggage rack adaptor of Rack-Time. This adaptor may be ordered by your A2B specialist dealer using the order no. 625450098300 and installed on the bicycle. This adaptor enables you to install various options of luggage transport by Rack-Time. You may choose either luggage baskets or a range of saddle bag solutions. Alternatively, you may use the base plate and a standard luggage rack of Racktime only. Please ask your A2B specialist dealer for information on the various options and the best solution for your needs. No matter which solution you choose, please observe the following when transporting your luggage:

1. Your A2B's battery is equipped with an integrated LED rear light. When driving at dusk or in the dark, please ensure that your luggage is fixed in such a way that the rear light is neither covered completely nor in part, since this involves a high risk of not being noticed by other road users.
2. Make sure the luggage is safely attached on the luggage rack and cannot fall down during the ride. Ensure that loose tightening straps or other objects cannot get into the spokes during the ride.
3. Observe the permitted maximum load of the vehicle's rear of 25 kg additionally with respect to the standard equipment. Do not overload the luggage rack.

4. This vehicle is not designed or released for transporting a second passenger, a child in a fitted children's seat or for pulling a trailer.
5. The permitted total weight of your A2B must not be exceeded. The permitted maximum total weight is indicated in the specification.
6. Distribute the weight of your luggage or the objects to be transported equally on both sides of the luggage rack.
7. Please remember that luggage or other loads present on the luggage rack alter the handling of your A2B. This applies in particular to steering and braking response.

 Noncompliance with these notes may lead to severe or even fatal injuries and/or material damage.

After your first tour

If you have any questions or the feeling that your A2B has not yet been adjusted and adapted to you as best as possible, we recommend to contact your A2B specialist dealer before using your A2B again.

Your range

Factors influencing the range:

- Level of assistance
- Battery charge level
- Use of the correct gears for the respective speed
- Tyre pressure
- Front wheel bearing and both brakes (tight bearings or dragging brake blocks reduce the range)
- Driver's weight (accelerating a heavy person requires more energy)
- Your speed and the wind conditions (quick pedalling during strong headwind reduces the range)
- Off-road (driving on soft areas or uphill requires more efforts)
- Frequent starting and stopping (full power from standing position takes the most current from the battery)

Maximising your range

- Completely charge the battery before every tour.
- Check the tyre pressure regularly and apply a pressure of 2.8 bar (front and rear tyre) to the tyres.
- Have your A2B maintained regularly to ensure that the wheel bearings are running freely and the brake blocks do not drag at the brake disks.
- Keep the total weight as low as possible.
- Drive at low speeds.
- Use the energy saving mode as often as possible and assist the motor by pedalling on your own.
- Lubricate the chain and derailleur using a special chain spray for bicycles.

5.0 Operating instructions Motor and Control unit Smart Man Machine Interface (sMMI)

5.1.1 Important instructions

Please read all documents enclosed with your A2B and all notes included in these operating instructions and on stickers available on the vehicle.

5.1.2 Intended use of the neodrives components

Your A2B equipped with the neodrives drive system is a Pedelec (Pedal Electric Cycle) for usual transport of one person in public road traffic. Any adjustments and repairs of the A2B and its components shall only be regarded as intended use as far as they are explained and permitted in these operating instructions, the instructions of the component manufacturers or further documents provided upon purchase of the Pedelec. The manufacturer does not assume any liability for damage caused negligently due to misuse, improper use, improper or omitted maintenance or repairs. The driver is responsible for checking the Pedelec as prescribed, having any necessary works carried out and using it appropriately.

The following sections of these operating instructions only describe the use of the neodrives components installed on your A2B and correspond to the state of the art at the time of printing. The manufacturer of the neodrives components reserves the right to make changes resulting from the further development of mechanics, the software or from the statutory requirements.

According to the manufacturer of the neodrives components, misuse of the neodrives components installed on your A2B includes the following, but is not limited to:

- Use of the drive system contrary to the instructions and recommendations of these operating instructions
- Exceedance of the technical performance limits defined in the present operating instructions
- Technical modifications of the neodrives components
- Modifications of the neodrives components' software
- Unauthorised installation or use of the neodrives components on bicycles other than the A2B Pedelec supplied to you.

5.1.3 Admissible operating conditions / places of use

neodrives components may be operated at temperatures between -10°C and 45°C.

Observe the safety instructions and hazard warnings included in the single sections of the present operating instructions. The restrictions of the admissible operating conditions (such as maximum climbing power, admissible maximum obstacle height, maximum user weight, etc.) contained herein have to be observed when using the Pedelec! Observe the safety instructions and hazard warnings included in the single sections of the present operating instructions.

5.1.4 Standard scope of supply (neodrives components)

- Drive motor
- Smart Man Machine Interface (sMMI) = Control unit incl. dock

5.1.6 Technical data

Drive	
Range*	Up to 120 km
Speed	25 km/h
Rated power (peak)	250 watts (650 watts)
Operating voltage	36 volts
Rated torque	12 Nm
Peak torque	40 Nm
Efficiency	80% (incl. electronics)
Control Power electronics	Integrated in wheel hub
Cassette receiver	Cassette receiver commercially available plug-in cassette, incl. 9-fold transmission
Brake disk	Diameter from 160 mm
Intake torque	Variable torque support can be adjusted to dropout
Weight	4.36 Kg (just drive, incl. plugs and cable, without brake disk, freewheel, cassette)

Smart MMI	
Display control *	Monochrome
Display diagonal size, resolution	2.4 inches, 240 X 320 pixels
Dimensions sMMI without dock	53 mm x 85 mm x 14 mm (W X L X H)
Connectivity	Micro-B 1.1 USB, 5-volt power supply, 500 mA connection to PC, incl. diagnostic and parameterisation software
Mechanical/electrical contacting	Twist-to-lock, corrosion-proof contacts, spring loaded
Lighting	LED Backlight, 70 – 350 cd/m ²
Display plate	Scratchproof, quenched and tempered acrylic glass plate
Weight sMMI (detached)	55 g

Smart MMI Dock	
Controller	23 mm inside diameter, 3 buttons (up, down, menu), permanently wired
Mounting plate	Stem and handlebar mounting, angle can be adjusted in 10° steps, height can be adjusted using spacers
Weight (incl. cable and remote control)	60 g

Whole system	
Operating temperature	-10°C to 45°C (recuperation and braking assistant, respectively will be automatically deactivated below 0°C)
Protection class	IP65

(*) The range varies depending on the battery used, the terrain and the prevailing travelling conditions.

The specified range can be achieved at optimum travelling conditions (e.g. even terrain, recently charged batteries, ambient temperature of 20°C, smooth journey, etc.), a driving power of 100 watts and a pedalling power of 100 watts.

Subject to technical and design modifications based on continuous further development.

These operating instructions can also be downloaded from our website www.weareA2B.com.

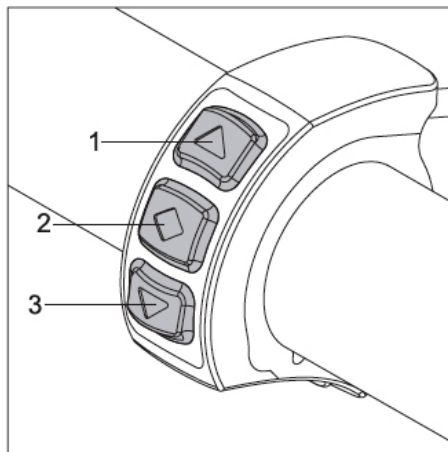
5.2. Controller

The controller fitted to the handlebar of your A2B is used to access menus and activate functions in the sMMI. The following functions are stored:

Button 1 = UP (one step upwards)

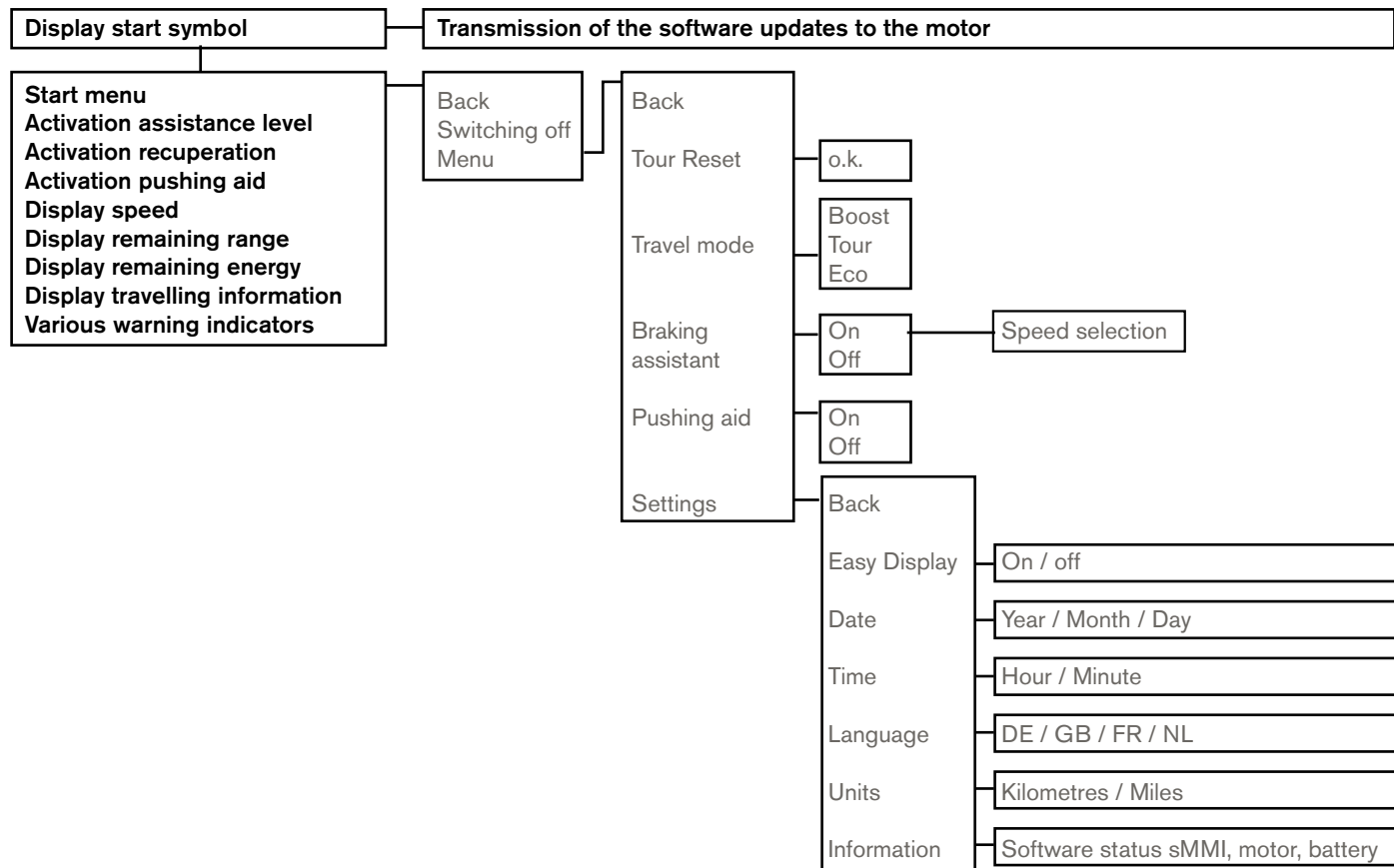
Button 2 = confirm menu button or selection

Button 3 = DOWN (one step downwards)



5.3. Smart Man-Machine Interface (sMMI)

The sMMI is fitted to your Pedelec's handlebar or stem. You may access various functions, activate or deactivate parameters using the controller's buttons (see section 2). For some functions you may also permanently store various parameters in the software of the sMMI (see section 3.2.15). Please contact your specialist dealer regarding this matter, they will be happy to inform and advise you. The following contains an overview of the menu structure of the sMMI for further information.



5.3.1 Fitting and removing the sMMI

Fitting

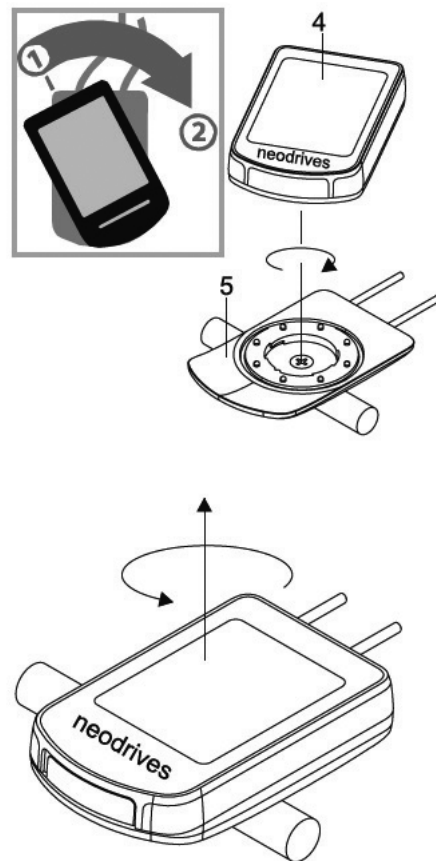
Place the sMMI [4] in the correct position (the "neodrives" logo faces the rider) and twisted to the left at an angle of about 30 degrees on the dock [5] (see chart).

Turn the sMMI [4] on the dock [5] by 30 degrees clockwise using slight pressure so that both components are aligned to each other. While doing so, the electrical connections to the controller, motor and battery pack are automatically established.

Removing

Turn the sMMI [4] on its dock [5] by about 30 degrees anticlockwise. While doing so, the electrical connections are disengaged and the sMMI [4] can be removed. Before removing, the sMMI must be switched off (see section 3.2).

i To protect your Pedelec from unwanted use by third persons or against theft, the sMMI should always be removed from the handlebar when not in use. Removing the sMMI, however, does not replace securing your Pedelec against theft by means of appropriate measures (use of a bicycle lock, an anti-theft chain or similar devices).



5.3.2 Functions of the sMMI

5.3.2.1 Switching on and off

Switching on

To switch on the sMMI, press the menu button [2] on the controller. After a couple of seconds, a welcome screen followed by the start menu shown opposite will appear. If functions are already activated or the battery is not fully charged, the display of your sMMI may differ from the figure in part.

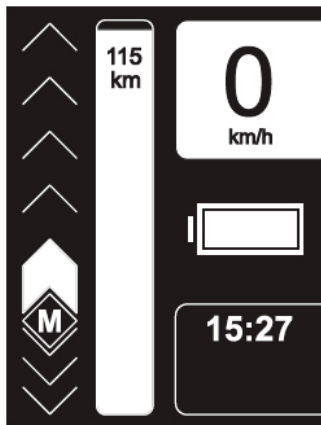
Switching off

To switch off your Pedelec, you have to press the button [2] of the controller for about 2 seconds, while the start menu is displayed. By doing so, you access the submenu shown opposite in which display you may jump up or down using the buttons [1] and [3] of the controller. Any selected field is displayed within a U-shaped edge. Select the field "Switch off" and press the button [2] briefly. Your Pedelec will now be switched off.

Automatic switch-off

If your Pedelec is not used for 10 minutes, the system will automatically be switched off. Pressing the menu button again will switch on the system once again.

⚠ Do not switch off your Pedelec by removing the sMMI, this could damage the electronics.



5.3.2.2 Start menu

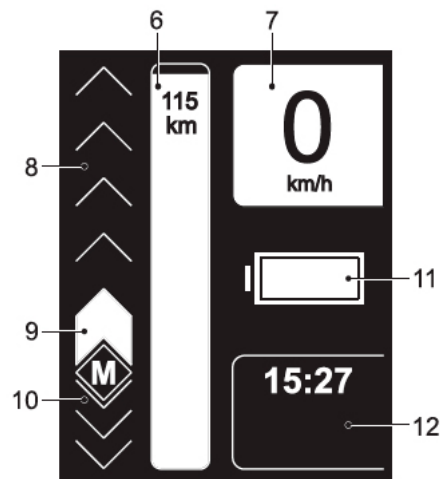
As described in section 3.2.1, the start menu shown in the opposite chart will appear upon startup.

Explanation:

- 6. Approximate value of the distance in km which can be travelled at the preselected level of assistance (remaining range)
- 7. Display of the current speed
- 8. Selection of the assistance level (see section 3.2.4)
- 9. Set assistance level (see section 3.2.4)
- 10. Selection of recuperation (see section 3.2.5)
- 11. Various alternating information and warning indications, see section 3.2.11 (shown here: remaining battery capacity)
- 12. Display of various travelling information (see section 3.2.10)

The letter "M" to set the menu functions in the left lower third of the display is only visible at standstill. For reasons of safety, various functions cannot be selected during the ride.

 All parameters changed by you will be saved permanently and be available each time the sMMI is switched on. In this respect, the display of your Pedelec may differ from the chart.



5.3.2.3 Dynamo function and switch-on routine "light" (optional)

The neodrives motor features a dynamo function and supplies the headlamp on your Pedelec with power even if the battery is flat, not attached or defective. Thanks to this function, a standard bicycle dynamo on the front wheel may not be required. In the normal Pedelec mode, the bicycle headlamp is supplied with 36 volts from the battery pack. When switching on the bicycle lighting, a certain sequence must be followed for electronic query routines:

1. Switch on the Pedelec, before switching on the lighting. Switch on the lighting only when the Pedelec shows readiness for travelling in the display for about 3 seconds.
2. After the end of the tour, the lighting has to be switched off as a basic rule so that the correct switch-on routine can be run when it is switched on again.

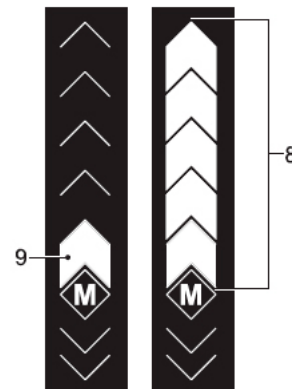
If the Pedelec, contrary to the above routine, is switched on when the lighting is switched on, a warning symbol is shown on the display. Switch off the Pedelec and the light in this case and proceed as described above.

5.3.2.4 Selection of the assistance level

An assistance level that you have requested (5 levels possible) may be permanently stored in the sMMI by your specialist dealer as part of a travel profile. This level will be available instantly after switch-on of the sMMI and will be shown on the sMMI's display as bar element [9]. You may also change the assistance level manually at any time using the buttons [1] UP and [3] DOWN of the controller, thereby increasing or reducing the number of the individual white bar elements in the field [8] according to the assistance level selected by you. When switching off the Pedelec, any changes made using the controller buttons are not included.

Therefore, when restarting the Pedelec, the assistance level stored in the travel profile will be available only.

According to the selected assistance level, field [6] indicates the distance that can be travelled using motorised assistance. The higher the selected assistance level, the more energy is consumed by the motor. The range to be achieved reduces accordingly.



When the Pedelec is stopped, please observe the following:

- If the pushing aid (see section 3.2.7) is activated, you have to move the Pedelec's pedals 2 to 3 times after a stop of the Pedelec, until the motorised assistance will be available again and you may increase or reduce the assistance level using the buttons on the controller.
- If the pushing aid is deactivated, the motorised assistance is instantly available when moving the pedals. Similarly, the assistance level can also be increased or reduced when the Pedelec is standing still.

 The field [12] of the start menu has multiple functions. By briefly pressing the controller button [2], various travel information can be displayed (see section 3.2.10).

5.3.2.5 Activation of recuperation

By activating the recuperation, you may recover energy when travelling and feed it into the battery. This is possible or useful from a speed of 15 km/h. The recuperation is activated and adjusted using the controller buttons [1] and [3].

- One white bar element [10] means: 50% energy recovery in the battery (factory setting, configurable)
- Two white bar elements mean: 100% energy recovery in the battery (factory setting, configurable)



Depending on the battery used and the speed, a maximum of 6A to 8A is recovered in case of 100% energy recovery. If recuperation is to be deactivated, this is also made using the controller button [1]. During energy recovery, "0 A" is shown in field [12] and the charging process [a] symbol in field [11]. If the energy cannot be recovered, because the battery is already charged above 90%, the symbol [b] is displayed instead. In this case, the sMMI's software waits for the battery to be discharged in part, then automatically switches on recuperation and changes to symbol [a].

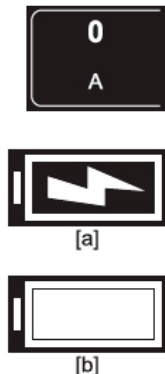
Automatic recuperation (optional)

Depending on the Pedelec's equipment by the manufacturer, recuperation can also be activated automatically by operating the rear wheel brake. By doing so, energy is automatically fed into the battery during every braking process. To ensure controlled and safe braking, recuperation during braking is made with 40% energy recovery.

 Recuperation may only be activated at temperatures above 0° C. If temperature drops below 0°C, recuperation is automatically deactivated.

 At speeds of less than 15 km/h the motor is not yet at its optimum operating point, this is why, recuperation cannot be activated.

 Activating recuperation is not possible with a fully charged battery, since the battery could be damaged as a result of overcharging. Only at a battery charge level ≤ 90% recuperation can be activated.



5.3.2.6 Braking assistant

The braking assistant can be activated before the ride, if required. It assists you with braking and ensures the recovered energy is fed into the battery (if the battery is not charged above the limit of 90% and the temperature is not below 0°C).

To activate the braking assistant, press the controller button [2] while being in the start menu (see section 3.2.2) to access the next submenu. Select "Menu" there and, in the selection window appearing afterwards, the item "Braking assistant". When selecting the item "On", a new menu item is opened in which, using the controller buttons [1] and [3], you may preselect the speed from which on a motor-assisted braking process is to be carried out. A speed between 10 and 28 km/h can be set. If you have adjusted the required speed, you can return to the start menu by pressing the controller button [1] several times.

If you wish to deactivate the braking assistant, repeat the procedure and select the item "Off" instead of "On". Please note that neither an automatic deceleration nor energy recovery and feeding into the battery are carried out if the braking assistant is deactivated - unless you select manual recuperation (see section 3.2.5)

Important notes

If the battery is fully charged, the braking assistant may be activated, but not actively used. This is only possible if the battery charge level is <90%. Therefore, the symbol of the fully charged battery (a) instead of the activated braking assistant (b) symbol is shown in field [11] of the display. Now, the sMMI's software waits for the battery to be discharged in part, then automatically switches on the braking assistant and changes to symbol [b].



[a]



[b]

Important information on the braking assistant's mode of action

If, for instance, 20 km/h have been preset by you, the system maintains this maximum speed irrespective of more or less slope if the slope is steep enough to achieve the adjusted maximum speed. This is carried out by the drive until the maximum motor torque is reached. If it is exceeded, the braking effect gradually decreases and you have to brake additionally on your own not to become faster. While the motor adjusts the travelling speed as described above, power is fed back into the battery which is charged.

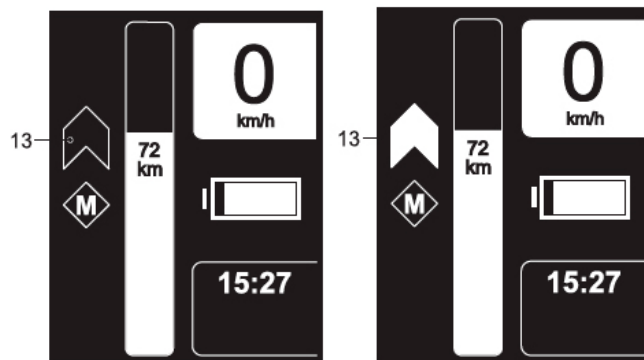
As soon as you start to pedal, the braking assistant is automatically deactivated. It will be reactivated as soon as you stop pedalling and there is no force acting on the chain or the force sensor in the wheel hub by means of the pedals. The assistant will, however, only become effective if the speed is not more than 28 km/h after you have stopped pedalling. By manual braking, the assistant can be brought back into the speed range where it is automatically activated then.

5.3.2.7 Walk assist / Walk assist button

If you require motorised assistance when pushing, e.g. at steep mountain slopes, you may activate the pushing aid. For this purpose, press the controller button [2] while being in the start menu (see section 3.2.2) to access the next submenu. Select "Menu" there and, in the selection window appearing afterwards, the item "Pushing aid". You may activate or deactivate the pushing aid in the next window which is opened. If you have adjusted the required function, you return to the start menu by pressing the controller button [1] for several times. The activation of the pushing aid is shown there by the symbol [13].

Use of the Walk assist / Walk assist button

- The pushing aid is used by pressing the controller button [1]. Thereby, the motor is switched on and moves your Pedelec at a maximum speed of 6 km/h as long as you press and hold button [1]. This is shown in field [13] as white bar element.
- If the buttons [1] or [3] are released, the motor is switched off. It may only be switched on when the Pedelec/Handbike is stopped.
- If the pedals are moved during pushing, the sMMI automatically changes to the mode of the preset assistance level (see section 3.2.4) so that the selection activated there is available for you.
- If the pedals are not moved any longer, the sMMI switches back to the pushing aid.
- If the sMMI is switched off, the activation of the pushing aid will remain in the programme and will instantly be operational when the sMMI is switched on next time. However, you first have to pedal 2 to 3 times until the motor moves the Pedelec when the button [1] or [3] is pressed.
- The pushing aid's maximum speed can be adjusted by your specialist dealer according to your requirements.



5.3.2.8 Date and time

Date and time can be set individually, too. The set time is shown in field [12] of the start menu, while the date is used for internal calculations in the sMMI only. As for the functions already described in the previous sections, you can access the various submenus from the start menu as indicated above to set the date and time (see overview provided in section 3). You can modify the required parameters here.

5.3.2.9 Assist mode

Three travel modes - BOOST, TOUR and ECO - are stored in the sMMI.

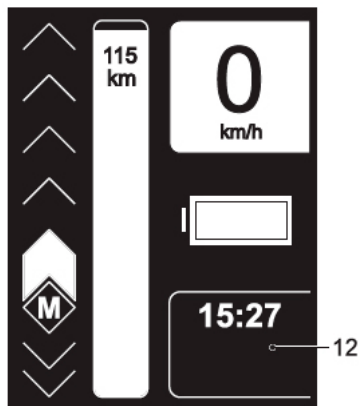
In Eco mode, the torque and thus, the maximum available motor power is automatically reduced by about 40%, thereby reducing power consumption. At the same time, the agility is also modified so that the drive responds better. The ECO travel mode is especially suitable for journeys in which the battery charge is to ensure as long a distance as possible.

In the Tour mode, 75% of the maximum motor torque are available. Performance and range both are at a high level. Moreover, the heat generation in the motor (see section 4, Thermal Management) is moderate in this mode so that long, steep inclines can be managed very well in the Tour mode.

In the Boost mode you obtain the full drive performance. It is suited for quick rides in the city, incl. powerful starting at traffic lights. The full "Boost performance" may not be permanently available. Under rough conditions, such as steep uphill rides, the drive performance may be reduced due to heat generation (see section 4, Thermal management). In the Boost mode, the range will also be smaller than in the other modes.

To activate the required mode, press the controller button [2] while being in the start menu (see section 3.2.2) to access the next submenu. Select "Menu" there and, in the selection window appearing afterwards, the item "Travel mode". Then, another window will be opened in which you may activate the required mode. After having completed the activation, you return to the start menu by pressing the button [2] for several times. The travel modes ECO and SPORT can only be selected when the bike has stopped, not during travelling.

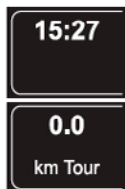
 The parameters stored in the BOOST, TOUR and ECO modes can be adapted to your requests. Please contact your specialist dealer concerning this matter.



5.3.2.10 Display of travelling information (bike computer functions)

Before, during and after a tour, various values and information are shown in field [12] and saved regularly. They can be adjusted as usual by briefly pressing the menu button [2] of the controller to show the subsequent function.

Explanation:



Current time (requires a presetting, see section 3.2.8).



Display of the distance travelled (requires "Tour Reset"). For this purpose, navigate to the function "Tour Reset" (Start Menu - Menu - Tour Reset; see chart in section 3) using the controller buttons (see section 2). After each activation of "Tour Reset", the display is set to "Zero" again.



The distance travelled by you since the first startup of your Pedelec.

Your average speed per tour. The average speed is calculated from each "Tour Reset" on and is displayed after a travelling time of 10 minutes.



The time in which you have ridden one or more tours; any stop of the Pedelec is not included. The travelling time is calculated from each "Tour Reset" on.



The current power consumption in Ampère.



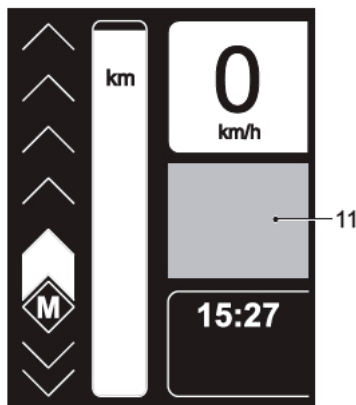
Your driver performance in watts.



The travel mode activated by you (BOOST, TOUR or ECO).

5.3.2.11 Display of information and warnings

The battery's remaining capacity is shown in field [11] as a standard. Depending on the travelling situation, information and warnings can also be indicated in the field as shown below.



Display of battery's capacity (standard representation)

The battery's remaining capacity is shown stepwise by a decreasing white bar.



Charging process of the battery



1. The battery charger is plugged in and the battery is being charged (only for battery models which are charged via a second charging socket which is why the power connection from the battery to the sMMI does not have to be disconnected).
2. The battery is charged by energy fed by the motor (recuperation, see also section 3.2.5).

Warning

The battery is flat. No power can be taken from the battery, motorised assistance of the Pedelec is no longer available. Please charge the battery as soon as possible using the supplied charger.



Braking assistant active

During a downhill tour, your Pedelec is automatically braked within the preset limits (see section 3.2.6)



Service reminder

The service interval of your Pedelec has expired. Please arrange a service appointment with your specialist dealer. The display can be reset by your dealer using diagnostic software.



Warning - Temperature problem

In case of extremely long and steep inclines (especially in BOOST mode), the drive generates heat leading to an automatic reduction of performance inside the motor from a temperature of +80°C. This is shown on the display by the temperature warning signal. Thanks to the intelligent multipoint thermal management monitoring (see also section 4), the motor will never be overheated. The performance is reduced to such an extent that any damage is excluded. Very rarely (e.g. heating by external heat sources) the system can be switched off completely until temperatures return to within the range of permissible operating values again.



Warning - General fault

A fault has occurred in the system, motorised assistance is non longer available. Please contact your specialist dealer.

Warning - System fault

Various letters (e.g. the letter "B" in the opposite chart) are shown inside the warning symbol instead of the exclamation mark. They have the following meaning:



B = battery fault
C = communication fault in the system
M = motor fault
R = controller fault



If a fault occurs, motorised assistance is no longer available. Please contact your specialist dealer.

5.3.2.12 Easy Display mode

By activating Easy Display, the following graphical symbols introduced in section 3.2.2 are enlarged and shown on the display:

- display of the current speed
- display of the daily kilometres travelled (requires prior RESET, see section 3.2.10)
- display of the battery's remaining capacity, incl. display of the expected remaining range

The respective display can be selected by briefly pressing button [2] of the controller. If the buttons [1] or [3] are pressed briefly, the indication of the assistance level which can be increased or decreased using the two buttons will appear for about 3 seconds.

Activation of Easy Display

You can access the display "on/off" from the start menu via Menu - Settings -Easy Display. If Easy Display is activated, you automatically access this mode every time the sMMI is switched on.

Deactivation of Easy Display

To deactivate this mode, you have to press the controller button [2] for about 2 seconds. You then access the display "on/off" via Menu - Settings -Easy Display.

5.3.2.13 Other settings

As a standard, your sMMI has a German user interface. If necessary, an English interface can also be activated. The software status of the sMMI, the motor and the battery pack can also be requested from the menu item "Information".

The language activation or status requests are carried out analogous to the procedures already presented in the previous sections via various menus and submenus.

5.3.2.14 USB port

The sMMI has a USB port [14] which is primarily used by your specialist dealer for maintenance and diagnosis. Make sure the rubber cover fixed above is always fully inserted and seals the port. If the sMMI is not fully sealed, moisture can get inside or steam up the display from inside.



5.3.2.15 Programming options by the specialist dealer

Your neodrives drive system has been optimally aligned to your A2B by the factory so that usually there is no need for changes. If individual changes have to be made based on your requests, the following parameters can be programmed:

Speed of the pushing aid forward dir.:

Set to 6 km/h in factory setting (permissible maximum value according to law). This value may only be reduced.

Standard assistance level:

The assistance level always available after switch-on of the Pedelec. Adjustable from 0 - 5, value 3 is preprogrammed in factory setting.

sMMI standard settings:

Language settings, time format (12/24 h)

sMMI lock:

The sMMI can optionally be permanently connected to the motor. As a result, the sMMI is only operable with this motor/system and cannot be used with another motor.

Service interval:

Depending on the specified appropriate maintenance interval, this interval can be set or reset by date or kilometres travelled (depending on which is first).

Wheel circumference:

To correctly display the speed and comply with statutory provisions as to speed restriction, the bicycle dealer may change the wheel circumference. This is only necessary if the drive wheel is subsequently fitted with a tyre increasing or reducing the original wheel circumference or if the motor has been readjusted to a larger or smaller rim.

This parameter may only be changed if the statutory requirements are complied with (max. 25 km/h for Pedelecs); in case of misuse the warranty and product liability will become void. Moreover, illegal tampering may lead to criminal consequences if detected during police checks

 All changes to the travel parameters are logged in the data storage of the sMMI.

5.3.2.16 Firmware updates and transmission of them to motor and battery

As part of product maintenance and to extend the range of functions, firmware updates are occasionally available for download by specialist dealers. Your specialist dealer will be glad to inform and advise you in this matter. If an update was loaded to your sMMI by your specialist dealer, the new firmware will be installed next time you start your Pedelec.

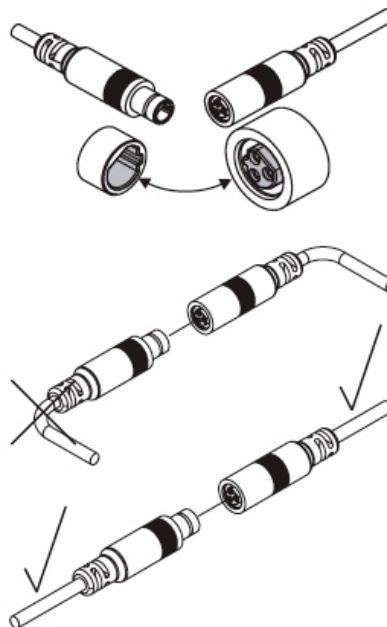
Proceed as follows:

- Put the sMMI on its dock [5] as described in section 3.1.
- The connection to the motor and the battery is automatically established and a warning "Firmware update is running" appears instead of the start menu. A live bar graph also shows the progress of data transmission.
- Once the data is fully transmitted, the screen display automatically changes to the start menu (see section 3.2.2).
- Check the settings stored in the sMMI by you, if any. They may have changed by reason of the update.

 Do not interrupt the update process, for instance, by removing the sMMI from its dock. This may cause damage.

5.3.2.17 Information on the sMMI plugs

If you need to remove the sMMI plugs leading to the battery, please observe the following information when connection them again. The sMMI plug and the socket on the additional cable to the battery must be correctly aligned to each other when connecting. Both parts are quite hard to connect, this, however, prevents moisture ingress during operation. Do not bend the attached cables by any means when connecting the plug and the socket! There is a risk of cable break.



5.4. Thermal management

A combination of three temperature sensors, an intelligent software control and patented air circulation ensure optimal cooling of the motor. This means: more and longer performance at gradients or in case of heavy (trailer) loads.

Advantage:

protection against premature overheating in case of long gradients or heavy loads - longer assistance on hills, higher efficiency and thus lower battery consumption since the motor is optimally cooled.

About the theory

As all drives, gearless wheel hub motors are also optimised with respect to an operating point consisting of speed, load and power. Our wheel hub motors are designed for operation in the speed range between 15 km/h and 25 km/h and a nominal drive power of 250 watts. They reach the highest efficiency and range in this speed and power range which means that the supplied energy is optimally converted into drive energy.

Whenever a motor is operated beyond the optimum operating point, its efficiency decreases. This results in the energy not being optimally converted any longer, but a part of the supplied energy is converted into heat. In this way, the range decreases and the heat must be discharged. In the neodrives motors this heat is discharged through a large contact surface inside the motor (stator carrier) to the dropout or chainstays of the bicycle frame. Cooling ribs inside and outside the drive casing additionally ensure the greatest possible heat exchange with the surroundings. Heat which cannot be discharged results in the drive motor being heated up.

The neodrives wheel hub motors monitor both the supplied energy and the temperatures in the motor. In this way, any damage for overheating by reason of overload can be avoided. This, however, results in the motor performance available to the rider being reduced to avoid overheating.

If the temperature of 80°C is exceeded in the motor electronics, the motor control reduces the supplied power and thus the assistance. This is indicated in the sMMI by the thermometer symbol shown opposite (see section 3.2.11). As the temperature increases, the power is continually reduced.



This means: the higher the temperature increase in the motor, the less drive power can be obtained and the less assistance is available. When the motor cools down, the supplied energy is increased again and the drive power increases.

This control of drive power depending on the motor temperature is infinitely variable so that there is always assistance available, but the motor cannot be damaged by overheating.

In practice

The above aspects, in practice, lead to a dependence on the outside temperature, the total weight, incline, terrain, cadence, air pressure and speed. These factors may lead to a temperature which causes the power or assistance to be reduced. This, however, does not mean a fault or failure of the drive, you may proceed with less assistance. In extreme cases, a short-term complete shut off may occur.

Extreme example:

an incline of 10-12% at an altitude of 500 metres, a total weight of 120 kg, loose terrain, a maximum assistance level, a travelling speed of < 10 km/h and a cadence of 60 rpm mean operation in an unfavourable range at low efficiency and travelling range and, at the same time, high heat generation. This will lead to a reduction of the drive power.

Tip:

By selecting a lower gear with higher cadence, the travel mode "Tour" or "Eco", a reduced assistance level and/or a short break (in which the drive can cool down again), you may ideally continue to cycle.

 The motor must never be "forcibly cooled" from outside by means of water! This may cause damage and does not support cooling very much since especially the inside of the motor becomes hot.

5.5 Motor

The drive wheel of your Pedelec can be removed from the bicycle frame at any time, such as for cleaning or in case of a puncture. Proceed extremely carefully when removing and afterwards mounting the drive wheel and, in particular, observe the information and instructions of the manufacturers of the various components fitted to the wheel, especially the brake disk. (Note: For better clarity, the following charts only show the drive motor integrated in the wheel, but not the complete drive wheel).

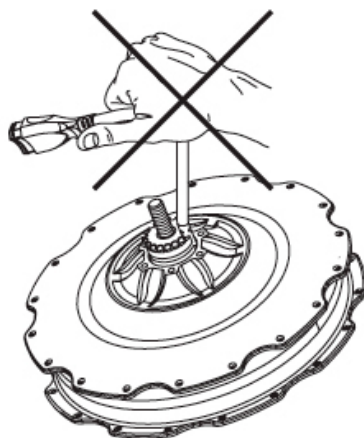
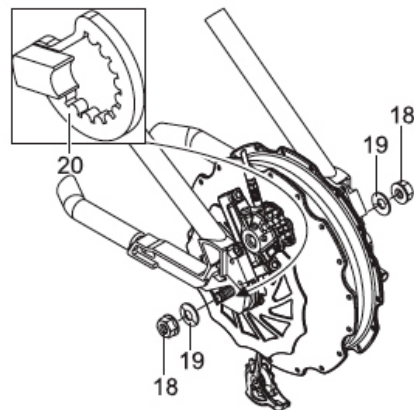
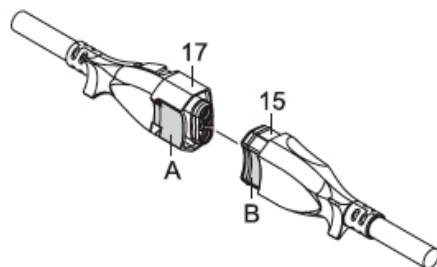
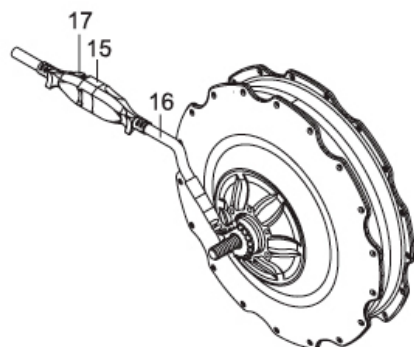
5.5.1 Removal of the drive wheel

Record or remember the cable installation and the fixing points of the cable ties before removing the drive wheel. First loosen and remove all cable ties attaching the cable [16] coming from the motor and cables and supply lines of other components to the bicycle frame. Afterwards, disconnect the plug [15] on the cable of the motor [16] from the socket [17] on the battery cable.

Loosen the two nuts [18] or the quick release used for fixing the wheel to the frame so that the complete wheel can be removed from your Pedelec's frame.

 Remember or mark the position of the torque support [20]. It must be reattached in exactly the same position as before removal when fitting the wheel later.

 Never hold or transport the removed wheel on the cable [16] coming from the motor! There is a risk of cable break.



5.5.2 Attachment of the drive wheel

Make sure that all components fixed to the wheel have been mounted according to the instructions and specifications of the respective manufacturer. This applies in particular to the brake and the gear box. Do not forget to remount the torque support [20] in the same position as before removal.

Then, push the wheel into the slot of the frame and tighten it using the hub axle nut [18] in the following sequence:

- first tighten on the side of the gear box (chart A)
- then tighten on the side of the brake (chart B)

The tightening torque of the two nuts is between 30 and 40 Nm in each case. Make sure that the tooth lock washer [19] is under the hub axle nut, otherwise there is the risk that the hub axle nut [18] can come loose.

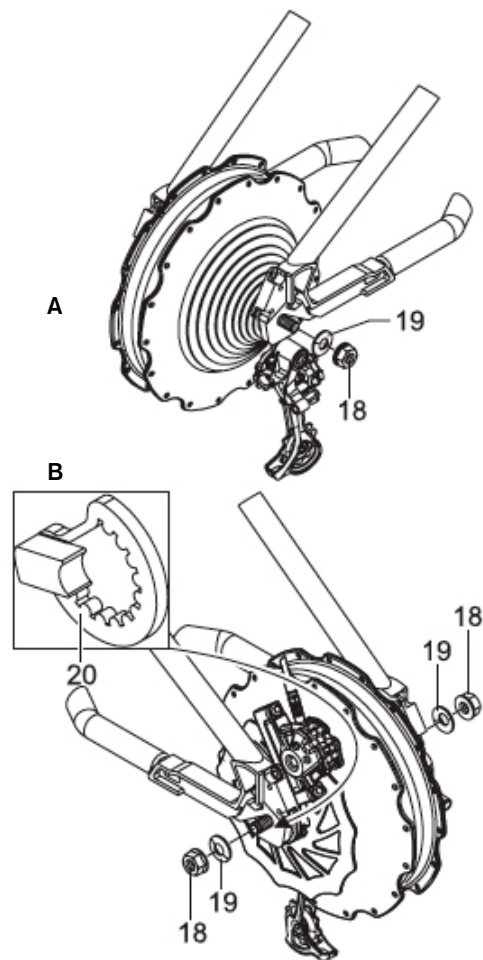
If your wheels are equipped with quick releases, please observe the manufacturer's specifications on mounting and the tightening torque.

If the wheel is correctly fixed to the frame, the motor can be connected to the cable end leading to the battery. While doing so, ensure that the plug [15] is correctly aligned to the socket [17]. The rounded surfaces ([A] and [B]) must be aligned to each other!

Fasten all cables and supply lines to the bicycle frame using cable ties and carry out a final functional test.

Make sure the cable is installed correctly since, in case of incorrect cable installation, the cable could get caught in the brake disk, the drive or the spokes leading to wheel locking and, subsequently, the rider falling down.

⚠ Observe the instructions and specifications of the manufacturers of the various components fitted to the wheel by all means during mounting works. This applies in particular to the brake, the gear box and the quick release.



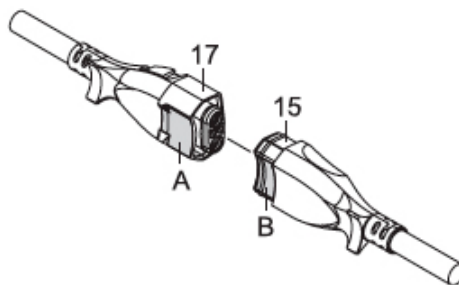
⚠ Never mount the motor without the torque support [20]. This would lead to a total loss (twisting off the cable). In this case, all warranty or guarantee claims shall become void.

⚠ Carry 5 cable ties along with you apart from your repair tool to be able to refasten any loose cables during a tour securely.

⚠ Mounting or removing the drive wheel can best be carried out if the Pedelec is turned upside down (put on handlebar and saddle). Remove the sMMI fixed to the handlebar first to avoid damage.

5.6. Cleaning of the motor and sMMI

Never use cleaning benzine, thinners, acetone or similar agents when cleaning the motor and sMMI. Never use abrasive or aggressive cleaning agents. Only use commercially available household cleaning agents and disinfectants (isopropyl alcohol) instead.



5.6.1 Motor

- Your Pedelec's motor should be cleaned regularly to remove dirt, ideally using a dry brush or a damp (not wet) cloth. Do not use running water, such as a water hose or even a high-pressure cleaner for cleaning. Riding in the rain and on wet ground, however, are possible without any problems.
- Ingressing water may destroy the motor. Therefore, always make sure when cleaning that neither liquids nor moisture get into the motor.
- Do not clean the motor when warm, e.g. immediately after a tour. Wait for the motor to cool down. Otherwise this could lead to damage.
- If the motor has been demounted, e.g. for cleaning, it must never be held or transported on the cables, otherwise there is a risk of cable break.
- If the motor has been removed from the Pedelec's frame (see section 4.1), the plug from the motor and the socket of the cable leading to the battery back must be checked for contaminations or cleaned before connecting.

5.6.2 sMMI

- The contacts of the sMMI dock are spring loaded and should be cleaned from time to time using a contact spray to ensure they operate flawlessly and for a long time.
- The sMMI casing must only be cleaned using a damp (not wet) cloth.

5.7. Transport

The following information has to be observed when transporting the Pedelec by car:

- Protect all components of your Pedelec from moisture and dirt by taking appropriate measures.
- Remove the battery and sMMI from the bicycle before attaching the Pedelec to the bicycle rack of your car. In this way, the weight which you have to lift in case of a roof bicycle rack is reduced.
- Always transport the battery and the sMMI inside your car.
- When transporting it inside your car (e.g. in an estate car), the sMMI and battery should also be removed to avoid damage during loading and the tour.
- In case of carrier systems featuring down tube clamping, make sure that the battery mounting rail is not crushed/damaged when tightening the clamping device.
- Ensure that the cable ends cannot cause damage to the Pedelec or your car during transport.
- Check all the Pedelec's contacts for possible foreign matters or moisture after the transport. To ensure safe operation, especially all plug connections must be free from dirt and foreign matters and completely dry.

- Never put your Pedelec on the gear box side during transport, for instance in a car boot. It could be damaged in this way.

5.8. Warnings

- When not in use, do not permanently expose your Pedelec to strong solar radiation. This would cause the motor to heat up and in extreme cases not be able to operate at full power. Plastic parts also age faster under intense solar radiation.
- If high temperatures (caused for example by uninterrupted operation or during stop by reason of permanent direct solar radiation) lead to a system standstill, let the motor cool down for about 10 minutes before continuing your ride.
- The maximum speed (non-motorised operation) of the system is 75 km/h. When exceeding this speed, you endanger the electronic components which could be damaged in the worst case. The maximum speed is logged by the system.

5.9. Error indications and possible remedies

**The system cannot be switched on
(no indication on the sMMI display)**

- Has the battery been correctly inserted in its holder?
- Have all plugs been correctly connected?
- Are there any deposits (such as metal filings) on the magnetic plug on the battery? Please check this very carefully!
- Is the battery "awake"? After 48 hours of non-use, the battery falls into a "deep sleep" and must be reactivated by pressing the battery button once.

- Has the sMMI lock been activated by the specialist dealer? If so, the sMMI only operates with the designated motor (see section 3.2.14 - Anti-theft measures).
- Do the sMMI contacts on the dock spring back properly? Press the 8 pins into the dock one after the other using your finger. Check if the pins spring back. If the pins are stuck, use contact spray.

The battery cannot be charged

- Are there any deposits (such as metal filings) on the magnetic plug of the charger? Carefully check the charger plug and the battery socket for deposits.
- Is the ambient temperature $<0^{\circ}\text{C}$? The battery cannot be charged below 0°C . Always charge the battery at room temperature. Observe the information on the charging process provided in the operating instructions of the charger, especially the error codes.

No motor assistance (sMMI operative, motor assistance not available)

- First check the correct alignment of the motor cable and motor plug to each other (see section 4.1).
- Does an error message appear on the display? If so, follow the respective recommendations (see section 3.2.11). Was the switch-on routine of the lighting observed? (see section 3.2.3).
- Is the system permanently in the recuperation mode? If so, check the brake lever switch located on the rear wheel brake lever (only for sMMIs with brake cable) for proper fit.
- Has the sMMI been correctly attached to the dock (see section 3.1)?

The recuperation/the downhill assistant does not work

- Is the battery charge level $>90\%$? Recuperation only works with a battery charge level $\leq 90\%$.
- Is the current travelling speed less than 15 km/h? Recuperation is not possible below 15 km/h.
- Is the current travelling speed more than 28 km/h? Recuperation is not possible above 28 km/h.

The assistance levels cannot be changed while being at stop

- You have activated the pushing aid in the menu. As soon as you start to pedal, you can select the assistance levels. Alternatively, you can deactivate the pushing aid via the menu again (see section 3.2.7).

The motor does not operate at full power output

- The motor might be in a high temperature range. From an electronics temperature of 80°C , power is gradually reduced. Let the Pedelec cool down for about 10 minutes (in the shadow) and then continue your ride.

The symbol of the service reminder (section 3.2.11) is shown on the display.

- You can continue to ride your Pedelec without any restrictions. But please arrange a service appointment with your specialist dealer. They can then reset the display.

6.0 Operating instructions A2B neodrives battery

6.1.1 Important instructions – please observe in any case!

Apart from these operating instructions, your Pedelec is provided with further documents.

Please observe the specifications and instructions contained in these documents.

6.1.2 Intended use of the A2B neodrives battery

The A2B neodrives battery is only destined for power supply to the neodrives drives system. No other components may be connected to it. Any further use is subject to the written consent of the manufacturer.

These operating instructions only describe the use of the neodrives battery and corresponds to the state of the art at the time of printing. The manufacturer reserves to make changes resulting from the further development of mechanics, the software or from the statutory requirements.

According to the manufacturer, misuse of the battery includes the following:

- Use of the battery contrary to the instructions and recommendations of these operating instructions.
- Exceedance of the technical performance limits defined in the present operating instructions.
- Technical modifications of the battery.
- Modifications of the battery's software.
- Unauthorised attachments or use of the battery.
- The manufacturer does not accept any liability for damage caused by misuse of the battery.

The manufacturer does not accept any liability for damage caused by misuse of the battery.

 Before starting your tour, read all safety instructions and hazard warnings contained in the individual sections of these operating instructions and all other enclosed documents.

6.1.3 Admissible operating conditions / places of use

The battery may be used at ambient temperatures between -10°C and +45°C

Also observe the information on the admissible operating conditions contained in the Pedelec manufacturer's operating instructions. This manufacturer's restrictions of the admissible operating conditions must also be followed!

Observe the safety instructions and hazard warnings included in the single sections of the present operating instructions.

6.1.4 Standard scope of supply (neodrives components)

- Battery, incl. 1 pair of keys
- Battery rail to attach the battery (already mounted on the Pedelec)
- the present operating instructions

6.1.5 Technical data

Name:	BM18650Z3	US18650NC1
Battery type:	Lithium ion	Lithium ion
Rated capacity:	11.25 Ah	14.5 Ah
Rated voltage:	37 V	36V
End-of-charge voltage	42.5 V	42.5 V
Total energy:	416 Wh	522 Wh
Maximum discharge current:	30 A	30 A
Ambient charging temperature:	0°C to 40°C	0°C to 40°C
Ambient operating temperature:	-10° to 45°	-10° to 45°
Number of cells:	50	50
Protection class	IP54	IP54
Weight:	about 3.25 kg	about 3.25 kg

Subject to technical and design modifications based on continuous further development.

Please keep these operating instructions for future reference.

These operating instructions can also be downloaded from our website www.weareA2B.com.

6.1.6 Main elements at a glance

Battery

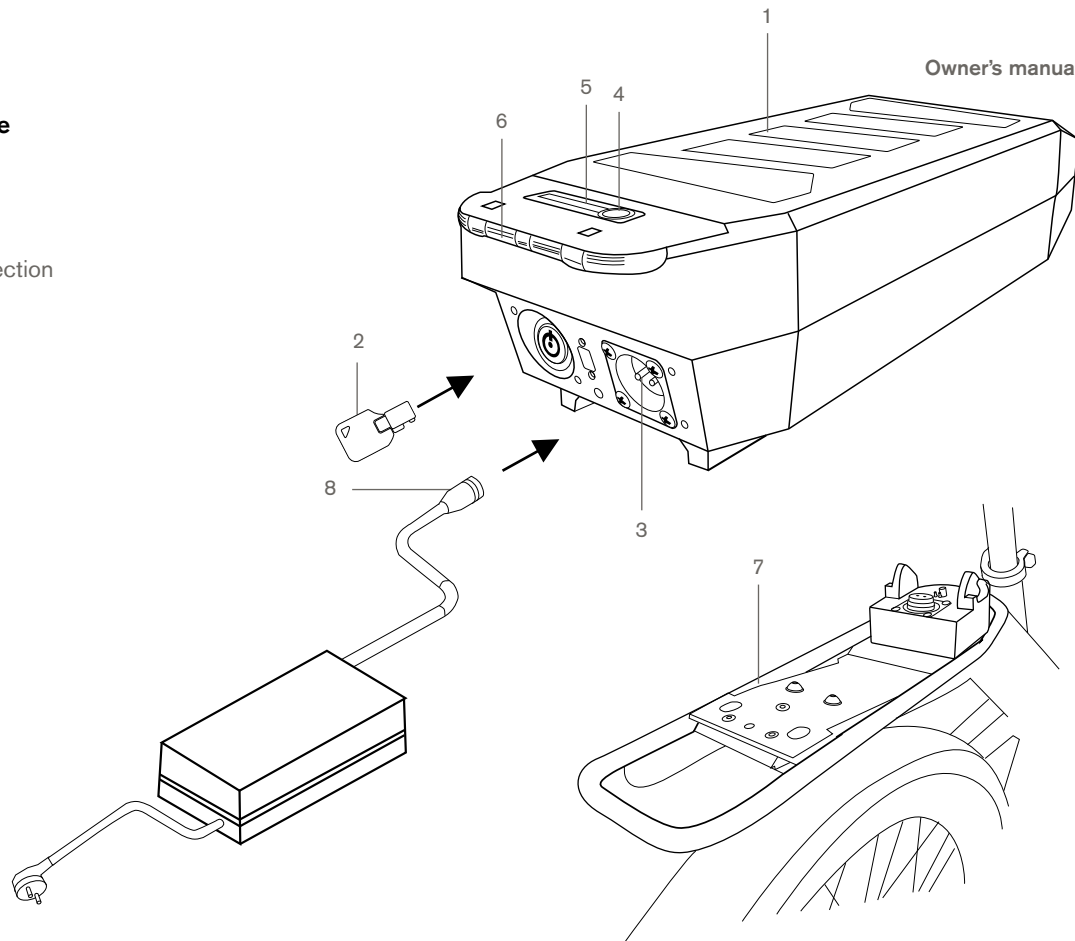
1. Battery (casing)
2. Keys
3. Charger socket / motor connection
4. On/off button
5. LED energy display
6. LED rear light

On the Pedelec

7. Battery rail

Battery charger

8. Charging cable plug



6.2. Safety instructions and warnings

⚠ Read and observe the following safety instructions and warnings before starting the battery and the charging process. Non-compliance with the safety information and instructions may result in damage of the product or electric shocks, fire and/or severe injuries. The lithium-ion battery contains chemical substances which may cause dangerous reactions if the present safety instructions are not complied with. The manufacturer does not accept any liability for damage resulting from the non-compliance with these instructions.

6.2.1 Safety instructions and warnings on the use of the battery

- The battery should be fully charged before using it for the first time.
- The battery may only be used at temperatures between -10°C and +45°C
- The battery must not be exposed to heat (e.g. radiators) or fire. External heat may lead to the explosion of the battery.
- In the (unlikely) event of the battery overheating or catching fire, the battery must by no means come into contact with water or other liquids. The cell

manufacturers recommend sand as only appropriate extinguishing agent.

- Your Pedelec consumes energy each time it is used. Therefore, charge the battery after each use, if possible.
- The battery may only be used for power supply of the neodrives components. Any further use is subject to the written consent of the manufacturer.
- The battery must not be opened or disassembled. Improper opening or wilful destruction of the battery involves the danger of severe injuries. Moreover, opening the battery will result in the warranty claim being voided.
- Never connect the battery contacts in the socket to metallic objects and ensure that the contacts never come into contact with metallic objects (for example with metal filings).
- If the socket is dirty, clean it using a clean and dry cloth.
- Never immerse the battery in water.
- The battery's life cycle, among other things, depends on its place of storage. Therefore, do not leave the battery (irrespective of whether the battery is inserted or has been removed from the Pedelec) in hot places for a longer period of time. Especially the boots of cars

parked in the sun should only be used for transporting it, but not as a general place of storage.

- The battery must not be exposed to mechanical impacts. If, for instance, the Pedelec tilts and the battery directly hits the ground, the battery must be checked by the manufacturer. Please contact your specialist dealer concerning this matter. A damaged battery must not be used again.
- If the battery is damaged or defective, it must be sorted out and checked. Please contact your specialist dealer and discuss further action with respect to return and repair. The defective/damaged battery must by no means be used again or opened.
- Always make sure to keep the battery clean and dry.

6.2.2 Safety instructions and warnings on the storage of the battery

- Protect the battery immediately after disconnecting it from the charger or motor. Moisture or foreign matters (such as metal fragments, small nails, filings or other conductive metals) must not get into the battery.

- Do not expose the battery to any kind of moisture (water, rainwater, snow, etc.) during storage!
- Charge the battery before storage and check the state of charge every 3 months.
- Store the battery in a cool and dry place where it is safe from damage and unauthorised access.
- To obtain an optimum battery life cycle, the battery should be stored at a temperature from 18°C to 23°C and a humidity of 0 to 80 per cent. The state of charge should be 70 per cent.
- Check the battery's state of charge every 3 months during storage and charge it to obtain 70 per cent, if required.
- The battery may only be charged at temperatures between 0°C and 40°C. If you try to carry out a charging process beyond this temperature range,
- The battery's automatic system automatically switches off the charging process.
- The battery reaches its maximum life cycle if charged at temperatures between 10°C and 30°C.
- Only use the intended chargers to charge the battery. Your specialist dealer will give you the relevant information.
- Using an inappropriate charger may lead to malfunctions and result in a shorter life cycle of the battery. There is also a danger of fire and explosion.

6.2.3 Safety instructions and warnings on the charging process

- Only charge the battery in a ventilated, dry and dust-free environment.
- Never charge the battery in the presence of or close to flammable liquids or gases.
- Do not expose the battery to any kind of moisture (water, rainwater, snow, etc.) during charging.
- Do not charge it in rooms in which the battery could come into contact with moisture.
- After the end of the charging process, the charger must first be disconnected from the mains socket and then from the battery.
- Ensure adequate air circulation as soon as the battery is charged.
- Only charge the battery if supervised.
- Damaged batteries must not be recharged or used again.
- Damaged battery chargers (damage to the plug, casing, cable) must not be used.

6.2.4 Safety instructions and warnings on the transport and dispatch of the battery

Lithium-ion cells are used in the A2B neodrives battery. Therefore, relevant statutory provisions are applicable to the transport and dispatch of the battery which have to be strictly complied with. For instance, a defective battery pack must never be transported in planes as a basic principle.

If your battery is defective, please take it to your specialist dealer in person since dispatch of lithium-ion batteries by post or other forwarders is strictly regulated. We recommend to contact your specialist dealer also in this case.

Since the transport regulations may change every year, we strongly recommend that you contact your travel operator, airline or shipping company before going on a trip to obtain information on the current applicable regulations. A defective battery must not be brought into the plane or put in the luggage. If your battery is attached to the Pedelec when transporting it, less strict transport regulations apply pursuant to UN3171.

 Keep the paperboard packaging of the battery back by all means in case you need it for transport.

 Discuss the transport with your specialist dealer before dispatching the battery.

6.2.5 Safety instructions and warnings on the charger

 Read and observe all instructions and warnings enclosed with the charger and the following safety instructions and warnings before starting the charging process.

- Only use the intended chargers to charge the battery. Your specialist dealer will give you the relevant information.
- Using an inappropriate charger may lead to malfunctions and result in a shorter life cycle of the battery. There is also a danger of fire and explosion.
- The charging process is automatically ended as soon as the battery pack is charged. Thus, overcharging is not possible.
- After the end of the charging process, we recommend to disconnect the charger first from the mains socket and then from the battery pack.
- Never use a charger other than the one recommended by your specialist dealer.
- Do not expose the charger to any kind of moisture (water, rainwater, snow) during charging.
- Do not carry out the charging process in rooms in which the charger could come into contact with moisture.
- Be careful if condensation occurs. If the charger is brought from a cold into a warm room, condensation may form. In this case, wait until the condensation has vaporised before using the charger. This may take several hours.
- Never carry the charger by the power cable or the charger cable.
- Never pull the power cable to disconnect the charger from the mains socket.

- Do not subject cable and plug to pressure. Excessive stretching or bending the cables, pinching a cable between a wall and a window frame or putting heavy objects on a cable or a plug may lead to an electric shock or fire.
- Lay the power cable and the attached charging cable in such a way that nobody can step on it or stumble over it and that both cables are not subject to any other damaging effects or influences.
- Do not operate the charger if the power cable, the charging cable or the plugs fixed to the cables are damaged. All damaged parts must be replaced immediately by the authorised specialist dealer. Do not use or disassemble the charger if it has received a hard blow, was dropped or damaged in any other way. Take the damaged charger to an authorised specialist dealer to have it repaired.
- The charger must not be used by children.
- Do not disassemble or modify the charger.
- Do not cover the charger during the charging process and do not put any objects on it.
- Never short-circuit the poles of the charging plug using metallic objects.
- Make sure that the power plug has been firmly inserted in the socket.
- Do not touch the plugs with wet hands.
- Do not use the charger plug and/or the mains plug if they are wet or dirty. Clean the plugs using a dry cloth before inserting them.

6.3. Startup

6.3.1 Information on the operating modes

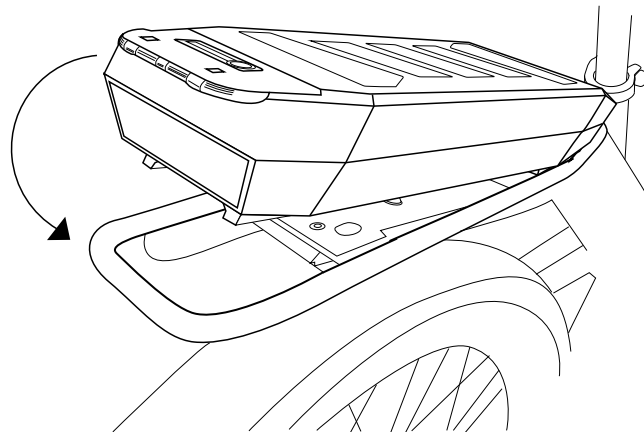
The battery has two operating modes. It is either in "Active mode" or in "Deep Sleep mode".

When being in "Active mode", the battery consumes at least 5 mA per hour (own consumption of electronics).

To keep the own consumption as low as possible, the battery automatically switches into the so-called "Deep Sleep mode" after 48 hours.

6.3.2 Insertion of the battery

- Put the battery's front end into the two rails located on the connector box.
- Place the battery on the luggage rack and slightly push it downwards until the lock snaps into place with a "click". While doing so, the electrical connection to the wheel is automatically established.
- Press the lock until it snaps into place in its casing. Now, the battery can no longer be removed from the luggage rack.



6.3.3 Switch-on of the battery

If the battery has been used within 48 hours, it does not have to be switched on. The Pedelec is operable and can be switched on via the sMMI and started.

If the battery is started for the first time or if it has not been used for more than 48 hours ("Deep Sleep mode"), it must be switched on.

- Briefly press the button.
- All LEDs [5] flash three times to indicate that the battery has been switched on.
- Your Pedelec is operable now and can be switched on via the sMMI and started.

 If the motor cable has not yet been connected to the battery, the battery will still be put into "Active mode" when switched on.

 If the battery cannot be switched on, the cell voltage might be too low. In this case, connect the charger and then press the on/off button. Then, the battery will be charged for a minute.

6.3.4 Display of the state of charge

You can check the battery's state of charge at any time using the LED display.

If the battery has not been used for more than 48 hours:

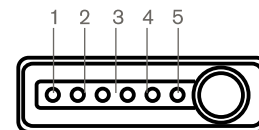
- Briefly press the button.
- The battery is switched on, all LEDs (a to e) flash three times.
- Briefly press the button again.
- Now the LEDs indicate the battery's capacity as shown in the following table.
- If the battery has been used within the past 48 hours:
- Briefly press the button.
- Now the LEDs indicate the battery's capacity as shown in the following table.

In travelling operation or in case of storage

- | | |
|-----------|-------------------------|
| ▪ 100-81% | ROC: LED1-LED5 lighting |
| ▪ 80-61% | ROC: LED1-LED4 lighting |
| ▪ 60-41% | ROC: LED1-LED3 lighting |
| ▪ 40-21% | ROC: LED1-LED2 lighting |
| ▪ 20-11% | ROC: LED1 lighting |
| ▪ 10-0% | ROC: LED1 flashing |

During charging

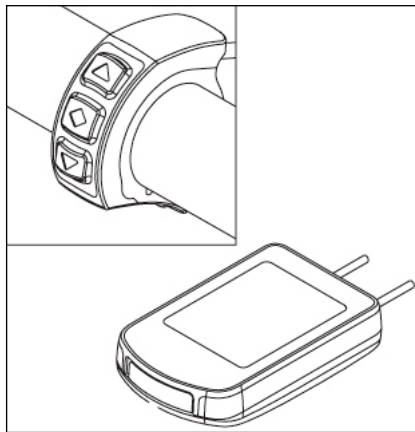
- | | |
|----------|-------------------------|
| ▪ 100% | ROC: LED1-LED5 lighting |
| ▪ 99-81% | ROC: LED1-LED4 lighting |
| ▪ 80-61% | ROC: LED1-LED3 lighting |
| ▪ 60-41% | ROC: LED1-LED3 lighting |
| ▪ 40-21% | ROC: LED1-LED2 lighting |
| ▪ 20-11% | ROC: LED1 lighting |
| ▪ 10-0% | ROC: LED1 flashing |



6.4. Removal of the battery

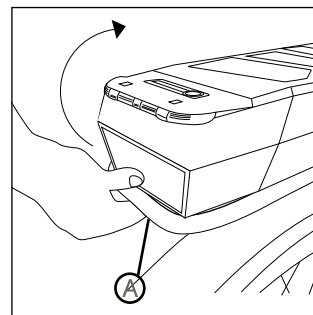
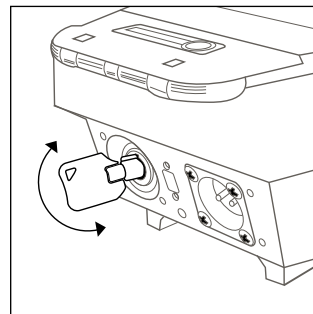
6.4.1 Switching off the battery

The battery is switched off using the controller of the sMMI (see operating instructions neodrives sMMI and motor). While doing so, the battery is first put into "Active mode" for 48 hours. This means that the sMMI can be reactivated at any time during this period without having to switch on the battery first. The power required in this context is minimal.



6.4.2 Removing the battery

- Open the cover flap on the luggage rack battery. Put the key into the lock on the luggage rack battery
- Push the key slightly into the lock and, while doing so, turn it into any direction.
- If the lock was turned by about 45 degrees, it comes out about 8 mm and automatically releases the lock.
- Keep on turning the key into any direction and, while doing so, pull it slightly outward. If the start position has been reached, the key can be pulled out of the lock.
- Pull the lock [A] on the battery's ground and lift it upwards using the carrying handle.
- Store the battery in a clean place.



6.5. Charging the battery

Completely charge the battery before using it for the first time. The battery's state of charge in general is 30% upon delivery. The battery may be charged in every state of charge without affecting the life cycle. The battery reaches its maximum life cycle if charged at an ambient temperature between 10°C and 30°C

6.5.1 Connecting the charger

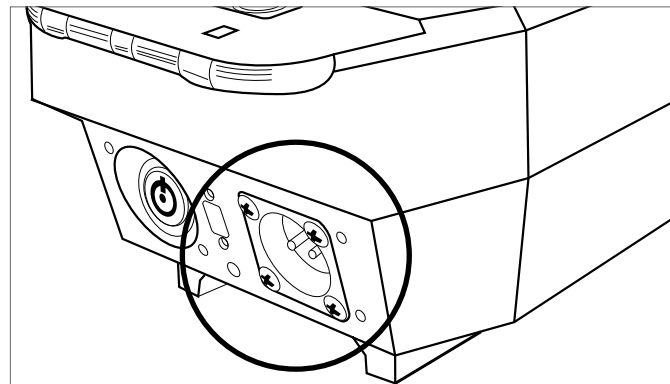
The battery [1] does not have to be removed from the Pedelec to charge it, but may remain there. Proceed as follows.

- Insert the charger's plug into the socket on the battery.
- The two parts are automatically correctly aligned and locked by a magnetic lock.
- Charge the battery in accordance with the specifications of the charger's operating instructions. Also observe the instructions as to the charging process contained in section 2.3.

 Before inserting the plug into the socket, make sure that both parts are clean and do not contain any metallic particles. If they contain metallic particles, these particles must be removed using a clean dry cloth.

6.5.2 Charging process

When charging the battery, follow the operating instructions of the charger.



Also observe the safety instructions and warnings included in sections 2.3 and 2.5

6.5.3 LED indications during charging process

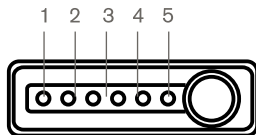
The following table shows the LED indications of the battery during the charging process.

In travelling operation or in case of storage

- 100-81% ROC: LED1-LED5 lighting
- 80-61% ROC: LED1-LED4 lighting
- 60-41% ROC: LED1-LED3 lighting
- 40-21% ROC: LED1-LED2 lighting
- 20-11% ROC: LED1 lighting
- 10-0% ROC: LED1 flashing

During charging

- 100% ROC: LED1-LED5 lighting
- 99-81% ROC: LED1-LED4 lighting
- 80-61% ROC: LED1-LED3 lighting
- 60-41% ROC: LED1-LED3 lighting
- 40-21% ROC: LED1-LED2 lighting
- 20-11% ROC: LED1 lighting
- 10-0% ROC: LED1 flashing



i If a fault occurs during the charging process, all LEDs start to light. Check if all criteria (such as ambient temperature, properly fixed charging plug, etc.) relating to the charging process have been fulfilled in accordance with the present operating instructions and the one attached to the charger.

i Do not leave the charger connected to the mains after the charging process is finished. After the end of the charging process, the charger must first be disconnected from the mains socket and then from the battery pack.

i Always check the battery pack's state of charge before starting a tour. It should be fully charged before starting the tour so that the motorised assistance is available at any time.

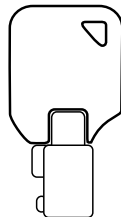
i The batteries may only be charged in a dry room at a temperature between 0°C and 40°C maximally.

i Observe the information of the operating instructions attached to the charger.

i Follow the safety instructions and warnings relating to the battery provided in sections 2.1 to 2.5 of these operating instructions

6.6. Keys

The battery's scope of supply includes two keys to lock the battery in the battery rail. Your specialist dealer should record the identification engraved in the keys in the attached documents of the Pedelec so that the keys can be reordered, as required.



Therefore, please check if the key identification has been recorded in the documents.

If not, please record it yourself.

Any keys may only be reordered via the specialist dealer Burg (As of October 2013).

6.7. Cleaning the battery

Never use cleaning benzene, thinners, acetone or similar agents for all cleaning works. Only use commercially available household cleaning agents and disinfectants (isopropyl alcohol) instead.

- The plug of the charging cable on the charger and the plug of the motor cable may only be cleaned using a dry cloth.
- Never spray off the battery using a steam-jet air ejector or similar devices.

6.8. Disposal

Electrical and electronic appliances must be disposed of separately from household waste and taken to disposal centres provided for by the legislature. The proper disposal and separate collection of old appliances is destined to prevent potential damage to the environment and health. They constitute a prerequisite for reusing and recycling used electrical and electronic appliances. Detailed information on the disposal of your old appliances is available from your community, waste disposal service, specialist dealer who you bought this product from or from your sales representative. This only applies to devices which are installed and sold in European Union member states and subject to the European directive 2002/96/EC. In countries outside the European Union, different regulations on the disposal of electrical and electronic appliances may be applicable.

6.9. Liability

A liability by the manufacturer shall be excluded in any case if

- the battery was / is operated improperly.
- the battery was / is started contrary to the present operating instructions.
- the battery was / is operated with inadequate battery charge.
- repairs or other works were / are performed by unauthorised persons.
- the battery was / is used contrary to the intended use.

7.0 Important safety instructions before your first tour

Make sure that you and your A2B are prepared for a safe and pleasant ride.

ALWAYS wear an approved bicycle helmet. If you lend your A2B to some else, you should always lend an approved helmet, too.

NEVER transport another person on your A2B. Overloading your A2B by transporting another person may cause severe or even fatal injuries.

FOLLOW all traffic rules. Always ride on the correct side of the road, in the direction of the traffic and not in the opposite direction.

Beware of vehicle doors. Remember that doors of vehicles in front of you might be opened.

Be very careful in wet weather. When the road is wet, the braking distance of your A2B might be twice or three times as long. Go slower, prepare for stopping in time and to brake earlier. Wet roads are slippery – be careful round bends and when turning.

Make sure that you are seen by others. In dim lighting and in the dark, you should wear light clothes, ideally with reflective stripes.

Remain attentive when cycling. Watch out for driving and standing vehicles.

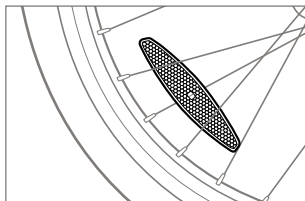
Special note for parents or persons entitled to custody

As parents or persons entitled to custody, you are responsible for the child's activities and safety when using the A2B. You must ensure that:

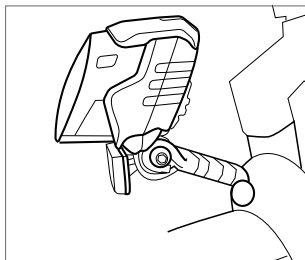
- your A2B is correctly adjusted for the child.
- your A2B is in a proper and safe operating condition.
- you and your child have learnt and understood how to safely use the A2B.
- you and your child have learnt, understand and comply with the local applicable regulations relating to motor vehicles, bicycles and traffic.
- you and your child observe the generally accepted rules of behaviour for safe and responsible cycling.
- you and your child have read this manual and you have discussed the warnings, functions of the A2B and operating procedures with your child before letting the child use the A2B.

Check your A2B before every tour

Walk around your A2B before every ride and check the brakes, tyres and fit of all major fastening elements. Have your A2B maintained in accordance with the maintenance schedule and checked at least ONCE a year by a certified A2B dealer. Your safety depends on your A2B's roadworthiness.

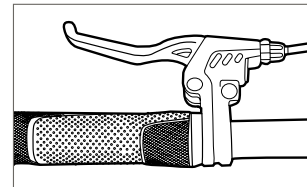


Reflectors. Your A2B is equipped with rear and side reflectors to make sure you are noticed at night. Make sure before every ride that the rear and side reflectors are fixed, properly positioned and clean.

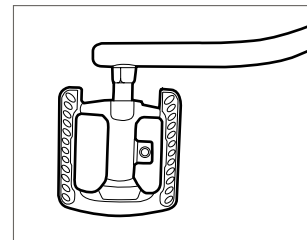


Lighting. Your A2B features a headlamp and rear lamp to make sure you are noticed at night. Ensure before every tour that the lamps are operative and clean.

Brakes. Check the brakes before every tour. The left brake lever actuates the front wheel brake, the right brake lever actuates the rear wheel brake.

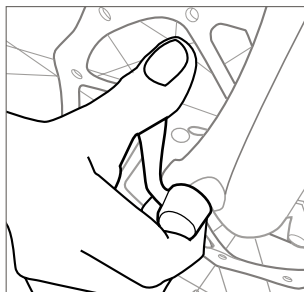
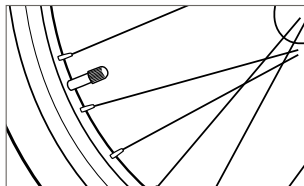


Brake pads. When checking the brake, the entire brake system must be checked. Brake pads are subject to usual wear and tear and wear out over time. Never wait until the brake pads are completely worn out. Ask your A2B specialist dealer to check the brake pads and replace them, if necessary.



Pedals. Ensure before every tour that the pedals are properly fixed and have a firm fit.

Saddle. Ensure before every tour that the saddle is correctly adjusted and has a firm fit (see 3.4).



⚠ Quick release. Ensure that the quick release on the front wheel is correctly adjusted and has a firm fit. In case of inadequate adjustment and securing of the quick release, the front wheel may come loose during the ride leading to severe or even fatal injuries and/or material damage.

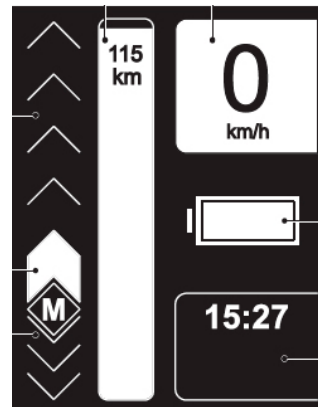
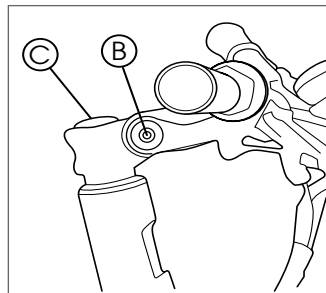
Tyre pressure. Your A2B is equipped with very durable bicycle tubes to prevent punctures. Bicycle tyres, however, usually lose pressure over time. Poorly inflated tyres might fail prematurely and mean that you have to use more power (pedalling power and motor power) to move your A2B forward. Low tyre pressure reduces the range which is possible per battery charge. The recommended tyre pressure for the front and rear wheel tyre is 2.8 bar.

⚠ Stem and handlebars.

Absolutely make sure that the screws of the handlebar clamp (see 3.5) and the stem (see 3.6) are tightened using the specified torque.

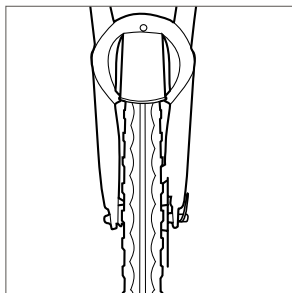
Battery. Check the display before the ride to ensure that the battery has been sufficiently charged for the planned distance.

i If any aspects in connection with the use and servicing of your A2B are unclear, please contact your A2B specialist dealer.



8.0 Maintenance

Have your A2B checked and maintained regularly by an A2B specialist dealer and in accordance with the maintenance schedule (see section 13 of these operating instructions), however, at least once a year.

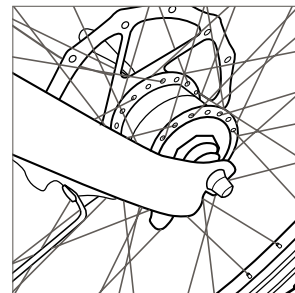


8.1 Wheels

The front and rear wheels should be aligned centrally in the fork and the frame. Regularly check the wheels for correct spoke tension and rim alignment. Do NOT use your A2B if the spokes are damaged or missing. The wheels should run smoothly and without horizontal or vertical wobble.

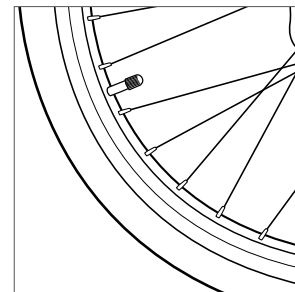
8.2 Hub bearings

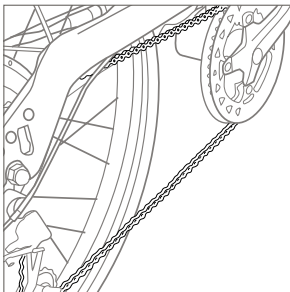
Regularly check the fit of the hub bearings by lifting the wheel from the ground and turning it and by trying to move the rim between the fork or the frame to the side. There should not be any movement to the side. If you notice that a wheel is moving to the side, the hub bearings have to be adjusted or replaced.



8.3 Rims

The rims must be smooth and do not have any cracks, bulges or flat areas. Take your A2B to your A2B specialist dealer, if required, to have the wheels repaired and/or adjusted.





8.4 Drive chain

Your A2B is equipped with a high-quality chain. This chain must be cleaned regularly and lubricated using a synthetic lubricant recommended for bicycles.

8.5 Brakes

Check the hydraulic brake lines for signs of wear and fray. Tightly pull the brake lever and check if the brakes operate properly. Make sure that the rotors are free from any residues and oil.

Never wait until the brake pads are completely worn out. Replace the brake pads as required.

If the brake pads look worn out or the brakes do not respond as usual, you should ask your A2B specialist dealer to check and replace the brake pads. Brakes are less effective if the road is wet.

If you have to travel in wet weather, always remember that your A2B has a longer braking distance. Go slower, keep a larger distance between yourself and other road users and start braking earlier as usual. Any non-compliance with these safety measures might lead to accidents with severe or even fatal injuries and/or material damage. If you have any questions on the use of the brakes, please contact your A2B specialist dealer.

 Brake disks and pads must be free from oil and fat.

8.6 Tyres

Check the tyres for damage, cracks and unusual or strong wear and tear. The tyre should be properly fitted into the rim. Regularly check the fit of the bead in the rim. Check if the tyre tread is free from any foreign bodies and the valve straightly protrudes out of the rim.

Damaged or worn out tyres should be replaced immediately. Take your A2B to an A2B specialist dealer or a qualified bicycle mechanic to have the tyres repaired and/or replaced, if necessary.

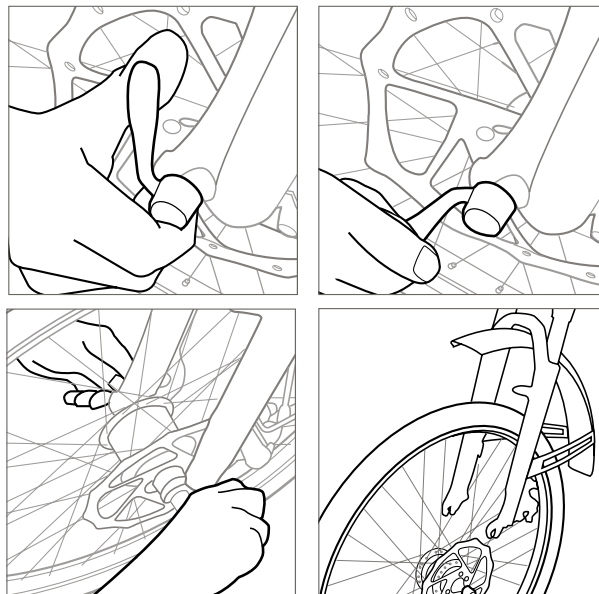
In the unlikely event that you have a puncture, you should be familiar with the proper method of removing and remounting the front and rear wheel.

8.7 Removing and remounting the wheels

Removing the front wheel

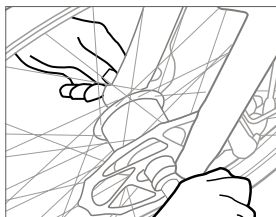
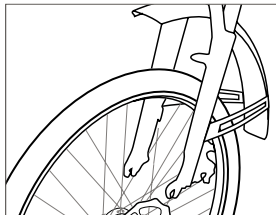
1. Loosen the quick release on the front wheel hub by turning the lever away from the hub until it is fully opened.
2. Turn the adjusting nut on the hub opposite from the quick release **ANTI CLOCKWISE** until the nut and the quick release unit stick out from the safety edges on the fork end.
3. The front wheel can be easily removed from the hub now.

⚠ Your A2B is equipped with a front wheel with quick release for easy removal and mounting of the front wheel. Please observe the instructions on the quick release system to ensure proper handling. If you do not observe the correct procedure for fixing the front quick release, the front wheel might come loose during the ride. This may lead to severe or even fatal injuries and / or material damage. If you have any questions on assembling and adjusting your A2B, please contact your A2B specialist dealer.

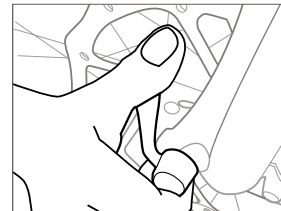


Remounting the front wheel

1. Position the front wheel in the fork in such a way that the quick release lever will be on the left-hand side of the fork.
2. Adjust the lever to the open position (OPEN, i.e. the lever is bent away from the hub) and push the front wheel axle into the dropouts of the fork.
3. Turn the adjusting nut on the right-hand side of the hub in clockwise direction so that you can feel resistance when closing the lever (when the lever is parallel to the midline of the hub).



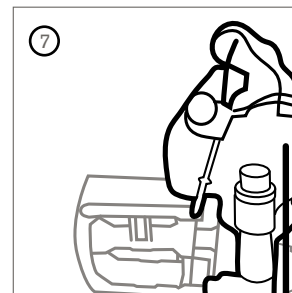
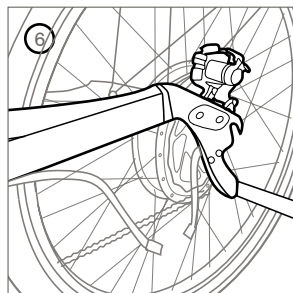
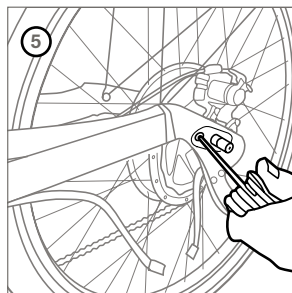
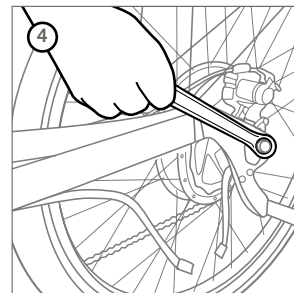
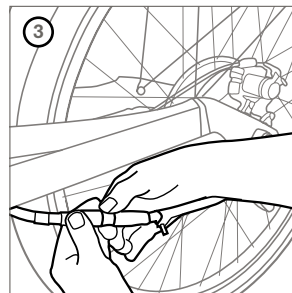
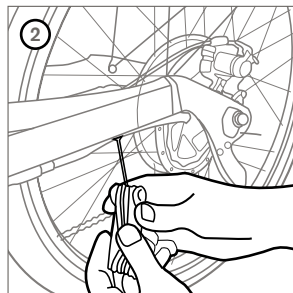
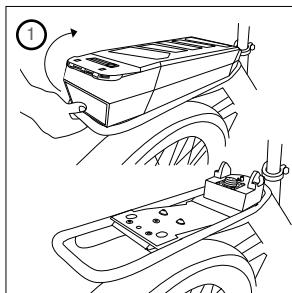
4. Hold the fork tight using your left hand and push the lever towards the fork until it is opened again. The lever must not stick out to avoid danger of injuries. The lever is safely attached if you must use efforts to push it into the closed position. The efforts are appropriate if the lever leaves a mark on the palm of your hand when pressing. If the lever is closed, the label OPEN is not visible any longer. A properly closed quick-release cannot be moved anymore unless it is reopened as specified above. If you can move the mechanism slightly, open the lever of the quick release, turn the adjusting nut by another 180° and try again.
5. Make sure that the brake disk has correct fit between the brake calipers and is correctly adjusted.



⚠ If such installation and adjustment of the brake is not completely clear, ask your A2B specialist dealer to adjust the brakes of your A2B for you. Incorrectly adjusted brakes might have a reduced brake efficiency which may lead to an accident with severe or even fatal injuries and/or material damage. Do NOT use your A2B if you are not sure whether the brakes work properly.

Removing the rear wheel

1. Ensure that the battery is not connected to the system any more.
To that end, remove the battery from the vehicle.
2. Remove the cable holders (on the back of the dropout and on the bottom side of the left chain stay) using an appropriate Allen key.
3. Disconnect the plug connectors for the power and control cables leading to the motor.
4. Loosen and remove the hub axle nuts using a 19-mm wrench.
5. Loosen and remove the retaining screw of the torque support on the left-hand side of the dropout.
6. Remove the torque support from the A2B by pushing it from the axle.
7. Pull the rear wheel from the frame now, while, at the same time, removing the chain from the freewheel.



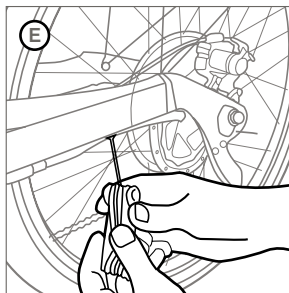
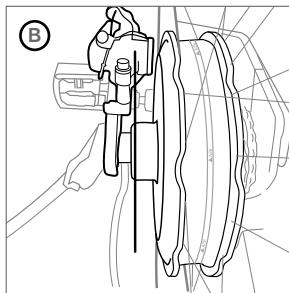
Remounting the rear wheel

Carry out the steps of removal (7-1) in reverse order.

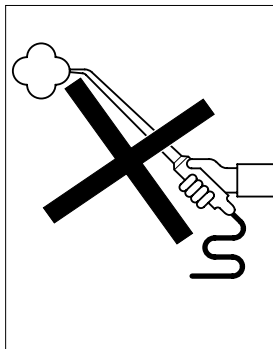
- A. Remount the torque support. Otherwise, the frame may be damaged.
- B. Ensure that the rear wheel is centred in the frame before safely tightening the hub axle nuts using 60 Nm.
- C. Make sure that the brake disk has correct fit between the brake calipers and the wheel is turning freely without the brake blocks dragging on it.

⚠ If such installation and adjustment of the brake is not completely clear, ask your A2B specialist dealer to adjust the brakes of your A2B for you. Incorrectly adjusted brakes might have a reduced brake efficiency which may lead to an accident with severe or even fatal injuries and / or material damage. Do NOT use your A2B if you are not sure whether the brakes work properly.

- D. Check the correct fit of the chain on the front and rear chainrings.
- E. Reattach the cable holders to the dropout and the frame.



9.0 Vehicle cleaning

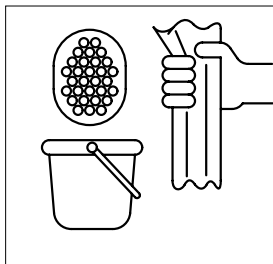


ⓘ Rubber- and plastic parts must not be damaged by aggressive or penetrating cleaning agents- and solvents.

⚠ Always carry out a brake test after cleaning and before starting a tour!

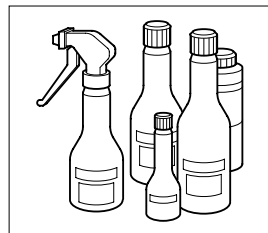
⚠ Do not use any steam cleaners- or high pressure blast cleaners! The high water pressure may damage seals, the battery and the entire electrical system.

- Only use a soft sponge and clear water for cleaning.
- Only repolish it using a soft cloth or leather!
- Do not wipe away dust and dirt using a dry cloth (scratches to the paint and on the coverings).



ⓘ Do not use paint polishing agents for plastic parts.

- Thoroughly clean the A2B after long tours and preserve it using a commercially available anticorrosive agent.



ⓘ For the purposes of environmental protection, we ask you to make economical use of care products and only use such products marked as environmentally friendly.

If the vehicle is used in the winter, road salt may cause major damage.

ⓘ Do not use warm water - stronger salt-induced corrosion. Immediately clean the vehicle after the tour using cold water; thoroughly dry the vehicle; treat parts subject to corrosion using wax-based anticorrosive agents.

10.0 Technical data

General technical data

- 17" Overall dimensions – 1,720 mm x 650 mm x 1,000 mm
- 20" Overall dimensions – 1,745 mm x 650 mm x 1,070 mm
- Empty weight without battery: 22.4 kg
- Empty weight with battery: 25.9 kg
- Permissible maximum load: 160 kg
- Permissible maximum load of luggage rack: 25 kg
- Maximum speed with motorised assistance, even terrain: 25km/h, NOTE: limited
- Maximum range, even terrain, without tailwind or headwind, without stopping/starting, lowest assistance level: Up to 120 km

11.0 Warranty and safety information

Hero Eco Warranty

1. Definitions

1.1 The following definitions stipulated in this clause shall apply to the warranty:

Goods means: In connection with the A2B: the frame, the motor system (motor and motor control), the lithium-ion battery and all other components of the A2B, except for the tyres, tubes and brake pads.

A2B means: Light electric vehicle, manufactured and distributed by Hero Eco.

Periods means: For the frame 5 years from the date of delivery of the A2B to you, for the motor system (motor and motor control) two years from the date of delivery of the A2B to you; for the lithium-ion battery two year from the date of delivery of the A2B to you, for all other components of the A2B, except for the tyres, tubes, brake pads and handles, two years from the date of delivery of the A2B to you.

Hero Eco means: Hero Eco Ltd.

You, your mean: The original purchaser of the A2B buying it from an authorised A2B specialist dealer.

2. Guarantee

2.1 Hero Eco warrants that, upon delivery of the A2B to you and for the specified periods, the goods:

- 2.1.1 correspond to the relevant description with respect to all major aspects and based on any conditions or information contained in brochures, promotion or other documents;
- 2.1.2 are of a satisfactory quality;
- 2.1.3 are appropriate for the purposes specified by Hero Eco or all reasonable purposes which you use the goods for;
- 2.1.4 do not have any major defects relating to construction, material and workmanship;
- 2.1.5 comply with all applicable statutory and regulatory requirements with respect to the sale of the goods in Europe.

2.2 Hero Eco provides this warranty in addition to your statutory claims relating to goods which are defective or do not fulfill the warranty conditions in any other way. Your local consumer advice centre or consumer protection authority will inform you of your statutory claims.

2.3 This warranty shall not apply in case of defects of the goods:

- 2.3.1 by reason of normal use and wear;
- 2.3.2 by wilful destruction, accident or negligence by you or any third party;
- 2.3.3 if your A2B has been assembled by any person other than Hero Eco or an authorised A2B specialist dealer

- 2.3.4 if you use the goods in a way not recommended by Hero Eco, such as using the A2B for commercial purposes or in competitions or for the purposes of training for such activities or events;
 - 2.3.5 by reason of non-compliance with our instructions, such as the user manual, by you;
 - 2.3.6 in case of any modifications, changes or repairs carried out by you without prior written consent of Hero Eco.
- 2.4 The warranty shall also be applicable to any goods repaired by Hero Eco or provided as replacement by Hero Eco in the unlikely event that the original goods are defective or do not fulfil this warranty in any other way.

3. Defective goods and return

- 3.1 Contact either an authorised A2B specialist dealer or Hero Eco directly using A2B.DE@heroeco.com
- 3.2 Hero Eco will ask you to take the A2B to an authorised A2B specialist dealer together with a proof of purchase. After Hero Eco has checked that the goods are defective, Hero Eco, at its own discretion, will:
 - 3.2.1 refund the costs of the defective goods in whole or in part or
 - 3.2.2 replace the defective goods or
 - 3.2.3 repair the defective goods.

4. Limitation of liability

- 4.1 If you or Hero Eco does not comply with this warranty, subject to clause 4.2, neither party shall be liable for any losses of the other party deriving out of it, except for losses which are a foreseeable consequence of the non-compliance with this warranty.
- 4.2 Neither you nor Hero Eco shall be liable for losses due to non-compliance with this warranty by Hero Eco, especially including, but not limited to:
 - 4.2.1 loss of income or earnings;
 - 4.2.2 loss of business;
 - 4.2.3 loss of expected savings;
 - 4.2.4 data loss or
 - 4.2.5 any lost time.
- 4.3 Clause 4.2, however, shall not prevent claims with respect to foreseeable losses or damage of objects in your possession.
- 4.4 This clause shall not, in any form, cover or limit the liability of Hero Eco for:
 - 4.4.1 death or personal injuries due to the negligence of Hero Eco or
 - 4.4.2 fraud or fraudulent misrepresentation or
 - 4.4.3 any other affair in which it would be illegal or unlawful for Hero Eco to exclude its liability or trying to exclude it.

12.0 Disposal

Hero Eco supports the professional disposal and recycling of our products. In case of need, please take your vehicle or vehicle components to a local disposal facility. Our specialist dealer or customer service may support you with disposal. Please call your specialist dealer or our customer service for this purpose. If requested, Hero Eco will carry out the disposal for you.



13.0 Maintenance schedule

To ensure the proper functioning and safety of your A2B related therewith, you should have a service check carried out once a year, however, at least at the times indicated in the table. Please contact an A2B specialist dealer for this purpose and have the vehicle checked routinely. This also applies if you do not notice any problems or signs of wear and tear when using your A2B.

The check by your specialist workshop is documented in the following maintenance schedule. Therefore, please keep it in a safe place.

Checklist

The following pages contain the maintenance tables checked by your A2B specialist dealer at the following times:

1. Maintenance upon assembly
2. First inspection after 200, no later than after 300 km
3. Further maintenance: every 2,000 km

No.	Step	inspection
1	Component assembly: Frame-handlebars-stem-saddle post-saddle ▪ Check components for cracks and replace, if necessary ▪ Check screws on handlebars/stem/saddle ▪ Clean & lubricate saddle post pipe	X
2	Front fork ▪ Completely clean suspension fork, espec. sliding surfaces of the standpipes ▪ Check standpipes for damage, replace, if necessary	
3	Rear wheel slot ▪ Clean TMM4 sensor using air, without demounting it ▪ Check firm fit & state of the sensor plate ▪ Check axle screws for firm fit	X X
4	Component assembly: Crank - inside bearing-pedal ▪ Clean crank & pedal / lubricate pedal axle ▪ Check sprocket for wear, replace, if necessary ▪ Check crank and pedal fastening for firm fit ▪ Check play of bottom bracket bearing, replace, if necessary ▪ Demount bottom bracket bearing, clean & lubricate casing & thread	X
5	Component assembly: Chain-cassette-sprocket ▪ Clean all parts. ▪ Check all screws for firm fit ▪ Check components for wear, replace, if necessary ▪ Clean & lubricate chain	X
6	Component assembly: Wheels-rims-tyres ▪ Clean parts ▪ Check tyres for damage and tread ▪ Adjust tyre air pressure ▪ Check front and rear wheel rim for lateral and radial run-out, adjust, if necessary ▪ Check spoke tension, adjust, if necessary ▪ Check functioning & bearing play of front wheel hub. ▪ Demount, clean and lubricate hub	X

No.	Step	inspection
7	Steering head ▪ Check bearing play of steering head and adjust or replace, if necessary	X
8	Component assembly: Derailleur system ▪ Clean and lubricate derailleur mechanism and derailleur. ▪ Check derailleur system cord and outer shells for state and function, replace, if necessary ▪ Check derailleur mechanism adjustment, adjust, if necessary ▪ Check all screws on the derailleur mechanism/derailleur for firm fit	X X
9	Component assembly: Brake system ▪ Clean brake bosses. ▪ Check brake pads, replace, if necessary ▪ Check brake pressure, refill brake oil, if necessary ▪ Check brake system for tightness. ▪ Check brake system screws for firm fit ▪ Check brake function and efficiency	X X X X
10	Guard plates-luggage rack-side stand-lighting system ▪ Tighten all screws ▪ Check lighting system for functioning & setting, adjust, if necessary	X X
11	Component assembly: electrical drive system & lock ▪ Check lines for proper fastening, breakings, chafing, bends, replace, if necessary ▪ Check plug contacts for corrosion and scaling, clean or replace, if necessary ▪ Check cable joints for correct connection ▪ Check display for functioning & error codes ▪ Run current software update ▪ Check battery state and charge ▪ Check alignment & state of the battery slide rails, adjust/replace, if necessary ▪ Check locking cylinder on battery slot for functioning, clean and lubricate ▪ Check brake switch/motor stop switch for functioning	X X X X

Date

Signature / stamp of the A2B specialist workshop

No.	Step	inspection
1	Component assembly: Frame-handlebars-stem-saddle post-saddle ▪ Check components for cracks and replace, if necessary ▪ Check screws on handlebars/stem/saddle ▪ Clean & lubricate saddle post pipe	X X
2	Front fork ▪ Completely clean suspension fork, espec. sliding surfaces of the standpipes ▪ Check standpipes for damage, replace, if necessary	X
3	Rear wheel slot ▪ Clean TMM4 sensor using air, without demounting it ▪ Check firm fit & state of the sensor plate ▪ Check axle screws for firm fit	X X
4	Component assembly: Crank - inside bearing-pedal ▪ Clean crank & pedal / lubricate pedal axle ▪ Check sprocket for wear, replace, if necessary ▪ Check crank and pedal fastening for firm fit ▪ Check play of bottom bracket bearing, replace, if necessary ▪ Demount bottom bracket bearing, clean & lubricate casing & thread	X X X
5	Component assembly: Chain-cassette-sprocket ▪ Clean all parts. ▪ Check all screws for firm fit ▪ Check components for wear, replace, if necessary ▪ Clean & lubricate chain	X X X X
6	Component assembly: Wheels-rims-tyres ▪ Clean parts ▪ Check tyres for damage and tread ▪ Adjust tyre air pressure ▪ Check front and rear wheel rim for lateral and radial run-out, adjust, if necessary ▪ Check spoke tension, adjust, if necessary ▪ Check functioning & bearing play of front wheel hub. ▪ Demount, clean and lubricate hub	X X X X X

7	Steering head Check bearing play of steering head and adjust or replace, if necessary	X
8	Component assembly: Derailleur system - Clean and lubricate derailleur mechanism and derailleur. - Check derailleur system cord and outer shells for state and function, replace, if necessary - Check derailleur mechanism adjustment, adjust, if necessary - Check all screws on the derailleur mechanism/derailleur for firm fit	X X X X
9	Component assembly: Brake system - Clean brake bosses. - Check brake pads, replace, if necessary - Check brake pressure, refill brake oil, if necessary - Check brake system for tightness. - Check brake system screws for firm fit - Check brake function and efficiency	X X X X X
10	Guard plates-luggage rack-side stand-lighting system - Tighten all screws - Check lighting system for functioning & setting, adjust, if necessary	X X
11	Component assembly: electrical drive system & lock - Check lines for proper fastening, breakings, chafing, bends, replace, if necessary - Check plug contacts for corrosion and scaling, clean or replace, if necessary - Check cable joints for correct connection - Check display for functioning & error codes - Run current software update - Check battery state and charge - Check alignment & state of the battery slide rails, adjust/replace, if necessary - Check locking cylinder on battery slot for functioning, clean and lubricate - Check brake switch/motor stop switch for functioning	X X X X X X X

Date

Signature / stamp of the A2B specialist workshop

No.	Step	inspection
1	Component assembly: Frame-handlebars-stem-saddle post-saddle ▪ Check components for cracks and replace, if necessary ▪ Check screws on handlebars/stem/saddle ▪ Clean & lubricate saddle post pipe	X X X
2	Front fork ▪ Completely clean suspension fork, espec. sliding surfaces of the standpipes ▪ Check standpipes for damage, replace, if necessary	X X
3	Rear wheel slot ▪ Clean TMM4 sensor using air, without demounting it ▪ Check firm fit & state of the sensor plate ▪ Check axle screws for firm fit	X X X
4	Component assembly: Crank - inside bearing-pedal ▪ Clean crank & pedal / lubricate pedal axle ▪ Check sprocket for wear, replace, if necessary ▪ Check crank and pedal fastening for firm fit ▪ Check play of bottom bracket bearing, replace, if necessary ▪ Demount bottom bracket bearing, clean & lubricate casing & thread	X X X X X
5	Component assembly: Chain-cassette-sprocket ▪ Clean all parts. ▪ Check all screws for firm fit ▪ Check components for wear, replace, if necessary ▪ Clean & lubricate chain	X X X X X
6	Component assembly: Wheels-rims-tyres ▪ Clean parts ▪ Check tyres for damage and tread ▪ Adjust tyre air pressure ▪ Check front and rear wheel rim for lateral and radial run-out, adjust, if necessary ▪ Check spoke tension, adjust, if necessary ▪ Check functioning & bearing play of front wheel hub. ▪ Demount, clean and lubricate hub	X X X X X X X X

7	Steering head Check bearing play of steering head and adjust or replace, if necessary	X
8	Component assembly: Derailleur system - Clean and lubricate derailleur mechanism and derailleur. - Check derailleur system cord and outer shells for state and function, replace, if necessary - Check derailleur mechanism adjustment, adjust, if necessary - Check all screws on the derailleur mechanism/derailleur for firm fit	X X X X
9	Component assembly: Brake system - Clean brake bosses. - Check brake pads, replace, if necessary - Check brake pressure, refill brake oil, if necessary - Check brake system for tightness. - Check brake system screws for firm fit - Check brake function and efficiency	X X X X X X
10	Guard plates-luggage rack-side stand-lighting system - Tighten all screws - Check lighting system for functioning & setting, adjust, if necessary	X X
11	Component assembly: electrical drive system & lock - Check lines for proper fastening, breakings, chafing, bends, replace, if necessary - Check plug contacts for corrosion and scaling, clean or replace, if necessary - Check cable joints for correct connection - Check display for functioning & error codes - Run current software update - Check battery state and charge - Check alignment & state of the battery slide rails, adjust/replace, if necessary - Check locking cylinder on battery slot for functioning, clean and lubricate - Check brake switch/motor stop switch for functioning	X X X X X X X X X

Date

Signature / stamp of the A2B specialist workshop

Further maintenance: every 2,000 km

No.	Step	inspection
Date	Signature / stamp of the A2B specialist workshop	after 4,000 km
Date	Signature / stamp of the A2B specialist workshop	after 6,000 km
Date	Signature / stamp of the A2B specialist workshop	after 8,000 km
Date	Signature / stamp of the A2B specialist workshop	after 10,000 km
Date	Signature / stamp of the A2B specialist workshop	after 12,000 km
Date	Signature / stamp of the A2B specialist workshop	after 14,000 km
Date	Signature / stamp of the A2B specialist workshop	after 16,000 km
Date	Signature / stamp of the A2B specialist workshop	after 18,000 km
Date	Signature / stamp of the A2B specialist workshop	after 20,000 km

14.0 Owner registration

You should complete your owner registration card immediately and return it or register online on www.wearea2b.com so that we may send you important information in the future. Thank you.

Your A2B and certain main components have unique serial numbers. You should note these numbers if you wish to stake out warranty claims later or if your bicycle gets lost or is stolen.

The vehicle serial number can be found on the bottom side of the frame near the pedal crank:

Vehicle serial number:

The motor serial number is engraved on the left-hand side of the motor hub:

Motor serial number:

Note this further important information:

Date of purchase: _____

Selling specialist dealer: _____

Address: _____

Town/postcode: _____

Phone: _____

Seller: _____

Please keep this information in a safe place.

 To appropriately protect your A2B from theft, you should buy a high-quality cable lock or a similar device. Each time you leave your A2B unattended, attach it to a firmly fixed object and lock it. Also lock the front and rear wheel and the motor on the frame.

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